For producers of Sand and Gravel, Crushed Stone, Cement, Lime, Gypsum, and other nonmetallic minerals

AUGUST 1956

PIT and QUARRY

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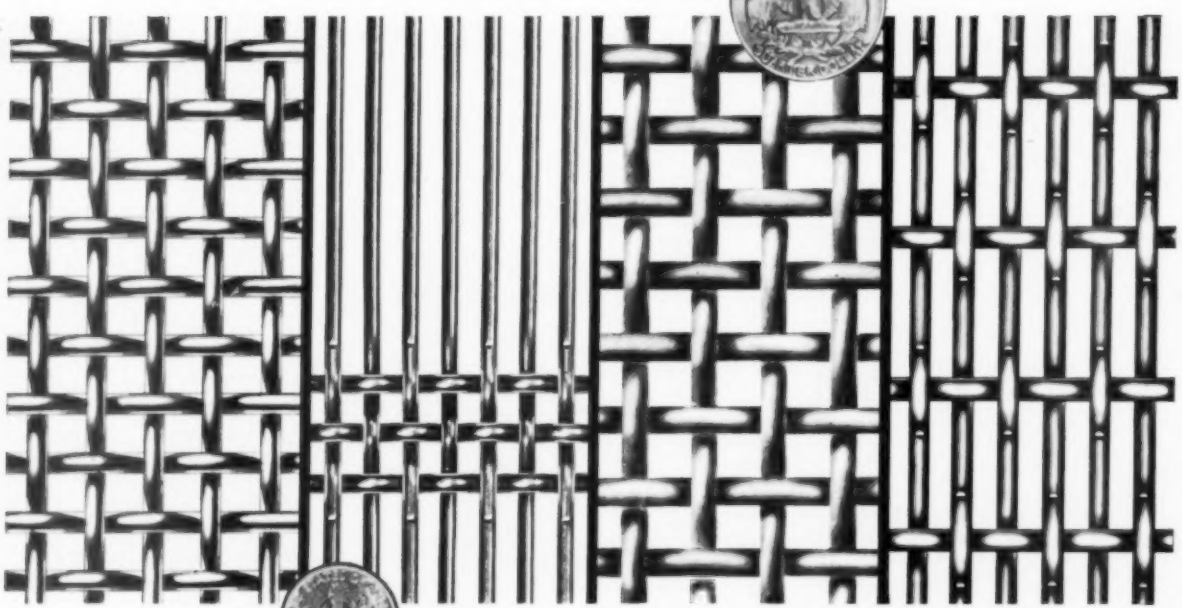

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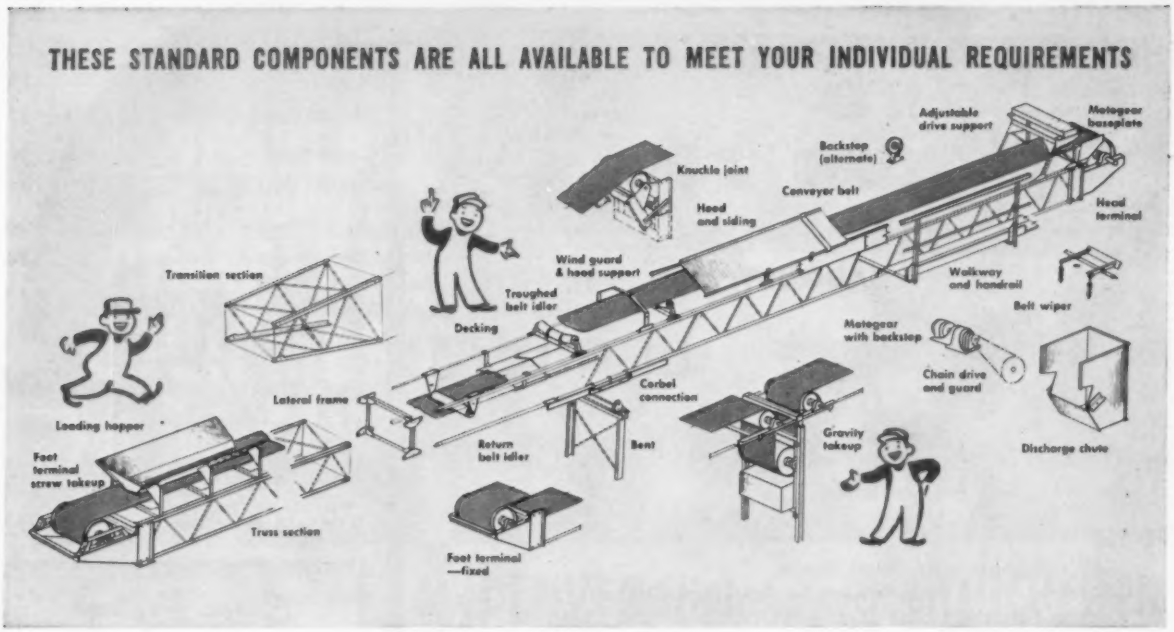

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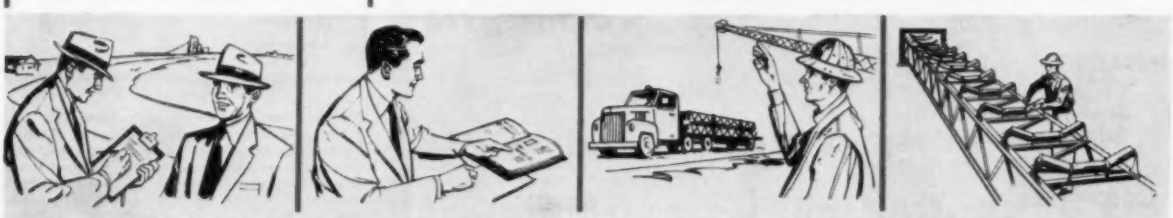

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pit and quarry

THE BASIC MAGAZINE IN A BASIC INDUSTRY

AUGUST 1956 Vol. 49 No. 2

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• Not the big one that got away, but a view of the 2-cu. yd. dragline operating in the wet pit of State Washed Sand & Gravel Company near Wauwatosa, Wis. In an 8-hr. shift, this unit discharges 2,500 cu. yd. of material onto the surge piles shown at lower left. The pit run material is then conveyed to the crushing plant, upper left, before transport to the washing and screening plant, upper center. Part of the output from this operation is used by the company to supply the batching plant, far background, for production of ready-mixed concrete.

Published on the first of each month for producers and manufacturers of Cement, Crushed Stone, Gypsum, Lime, Sand, Gravel and other nonmetallic minerals.

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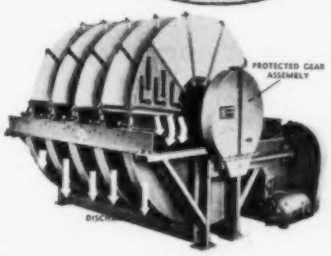

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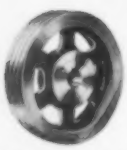

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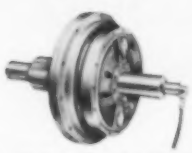

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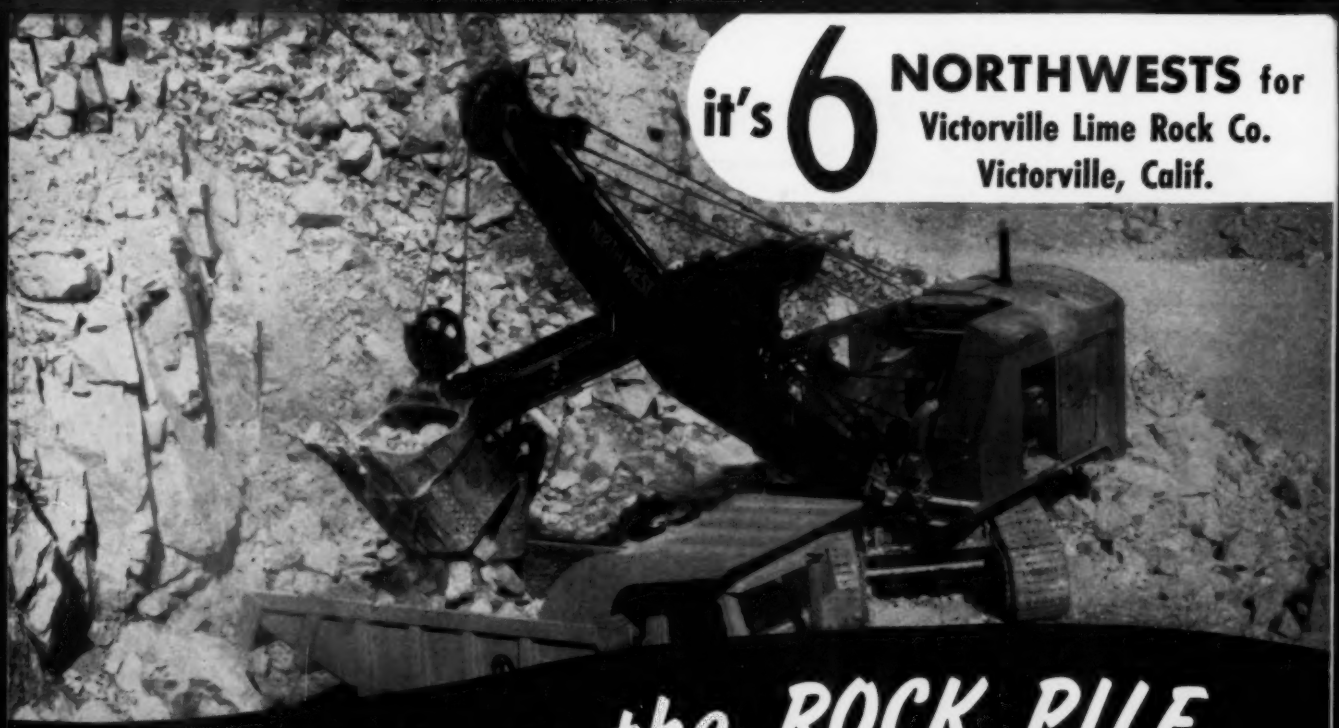

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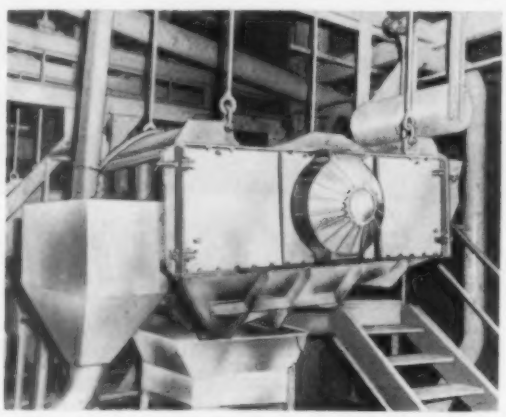

Suspended Gyroset 3' x 6' scalping oyster lime slurry at 1/8" opening. Baton Rouge Plant, Ideal Cement Co.

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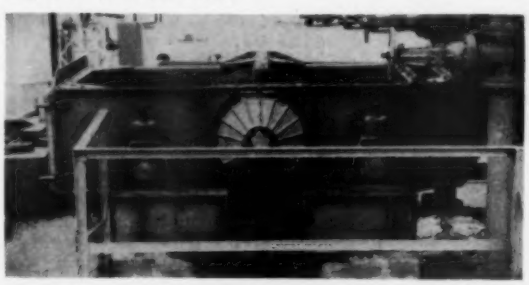

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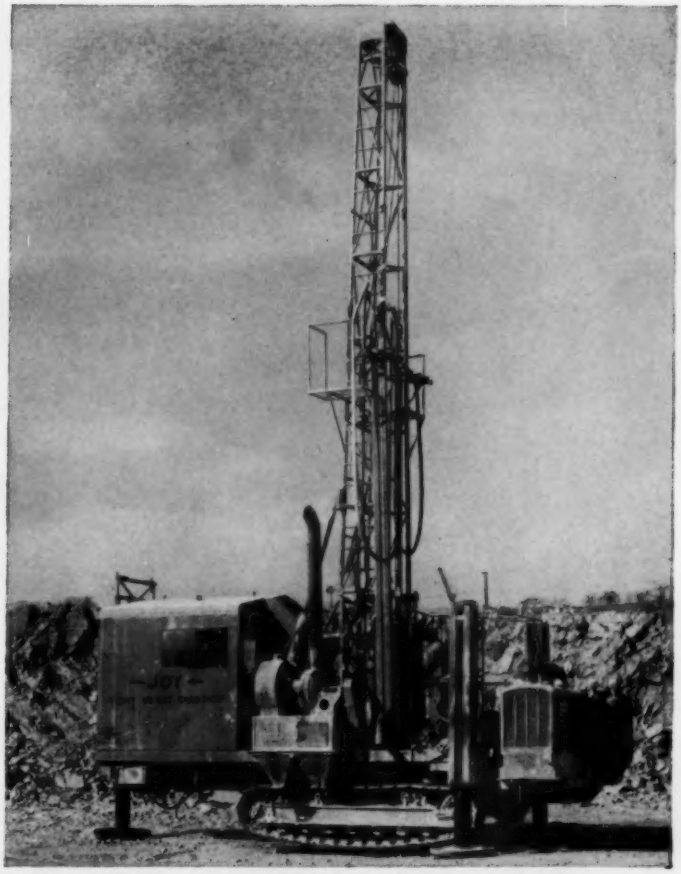

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CONTRACT BLAST HOLE DRILLER
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The Joy Champion DRILLS DRY with a tri-cone roller bit which continuously pressure-cuts the rock. An air-blast, forced down the drill pipe and through the bit, cools the bit and forces cuttings to the surface.

The Champion drills straight, smooth-walled, easily loaded holes up to 7⅞" diameter and to any quarrying depth required. It moves fast between holes and sets up quickly for drilling on three hydraulic jacks. Two Champion models—Mediumweight and Heavyweight—can be furnished with either electric or diesel drive. ***Joy Manufacturing Company, Oliver Building, Pittsburgh 22, Pa.*** In Canada: *Joy Manufacturing Company (Canada) Limited, Galt, Ontario.*

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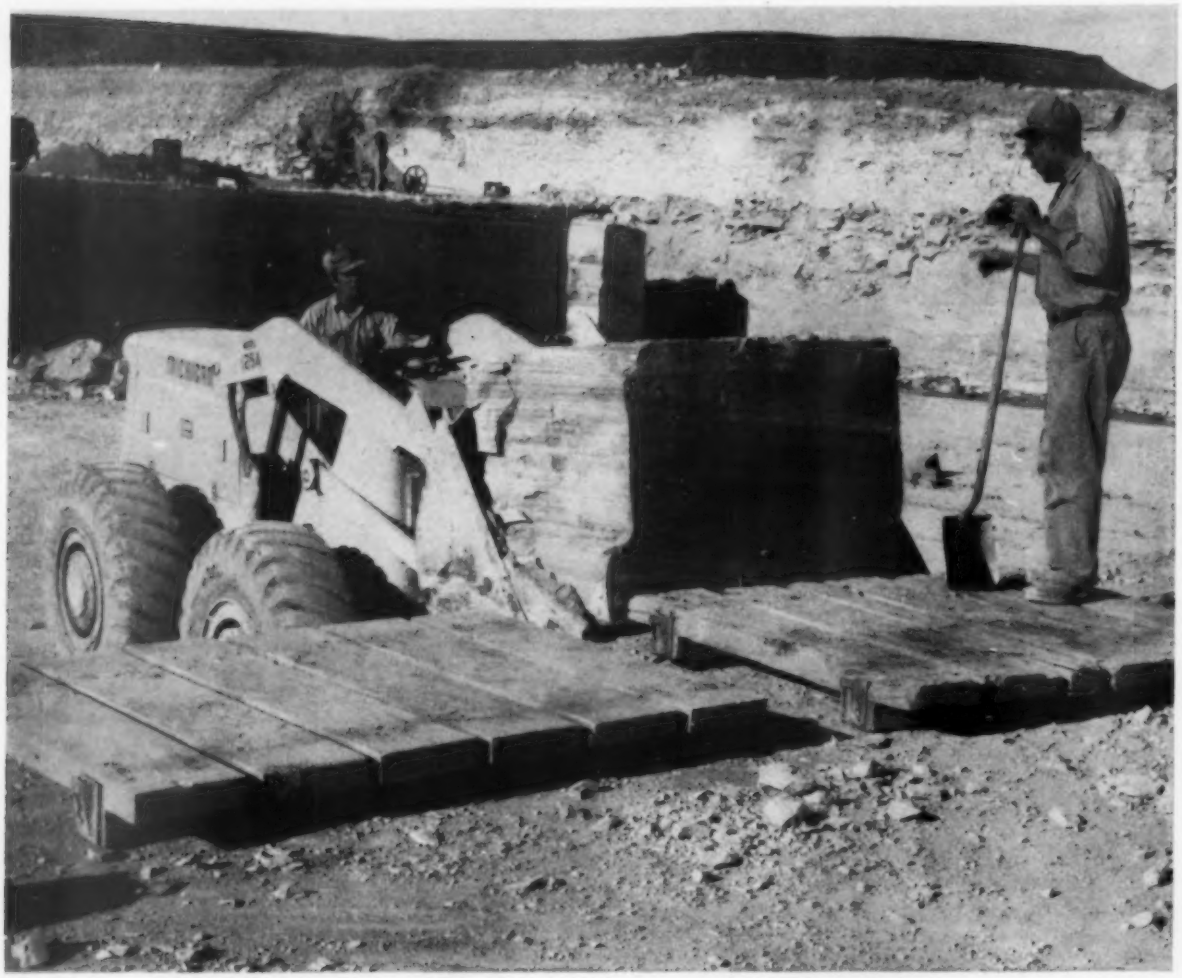

Breaks out rock, palletizes and loads it out . . .

Versatility of Michigan Tractor Shovel cuts handling costs for Pacific Stone Co. quarry

When you can buy one machine to handle a *multitude* of quarry jobs, you've got a real winner. That's exactly the experience of Pacific Stone Company's dimension stone quarry near Winnemucca, Nevada—with their 1⅝-yd. capacity Michigan Tractor Shovel. They use the Michigan to strip overburden, clean up, dig trenches for placing the saws, handle rock and load it out. Pacific Stone had tried several other pieces of equipment on these different jobs, but only the Michigan proved satisfactory as an *all-around machine.*

Breaks out large pieces

After a horizontal and vertical cut has been sawed into the face of the rock, the Michigan operator inserts the bucket cutting-edge into the cut, works the cutting-edge up and down to break out the rock. The Michigan, with two big double-acting bucket cylinders, exerts tremendous break-out force at any height, independent of the boom hoist. When the rock is loose, the operator loads it into the bucket.

Palletizes and loads

The Michigan carries the large pieces of rock across the pit and places them on pallets (see photos). With a special chain attachment which hooks onto the bucket, the Michigan picks up the loaded pallets and lifts them aboard standard flat-bed semi-trailers for the 150 mile trip to Winnemucca. Each pallet-load weighs approximately 11,000 lbs., yet

the Michigan handles them with ease.

Make your own comparison

When Sierra Machine Co. (the local Michigan distributor) first demonstrated the Model 125A to Pacific Stone Co., the Michigan's heavy-duty versatility was obvious. The exclusive Clark power-train—3-to-1 torque converter, power-shift transmission and planetary-wheel axles—gives this machine more useable power and speed than you've ever seen on a rubber-tired Tractor Shovel. Clark gives you a completely integrated product—one single source for design, manufacture and service of all basic components of the Michigan Tractor Shovel.

How to buy a Tractor Shovel

Before you buy a Tractor Shovel, make your own comparison. Check the specifications on paper—tire size for adequate flotation, power, speed, etc. Then find out *in person* what a Michigan will actually do on the job. Ask your Michigan distributor to show you how this machine digs its way into tough material for heaping bucket loads, power-shifts through fast loading cycles, covers more ground in your pit at speeds up to 27 mph. Check it out on jobs you've always considered too tough for rubber-tired Tractor Shovels—on many, it will outproduce crawler-loaders!

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The Michigan Tractor Shovel invites your comparison—name the job you want to see it on.

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1 To break out a large chunk of rock, the Michigan operator inserts the bucket blade into the horizontal cut—then works the blade up and down. When the rock is loose, the operator crowds in to get the rock into the bucket.

2 Low-level bucket action enables the operator to carry the big chunk low, after it has been broken out. Operator visibility is good, center of gravity is low for fast travel across the pit where the rock is placed on pallets for shipping.

3 Handling 11,000 lb. pallet-load of rock with a special chain rig. The Michigan still has plenty of lifting height to put the load aboard a standard semi-trailer.

The Editor's Page

Everyone Must Practice Safety

INDUSTRIAL injury rates among member companies in 1955 showed a reduction in frequency and an increase in severity compared with 1954, according to an advance release from the 1956 edition of the National Safety Council's annual statistical yearbook, *Accident Facts*. Twenty-five of the 40 basic industry classifications reduced their frequency rates; more than half reduced their severity rates, but this did not make up for the increases in others. Each of the three classifications in which the nonmetallic minerals industries are included showed sharp reductions in accident frequency, but two had sharp increases in severity, while in the other there was no change.

The average accident frequency rate for all industries, based on the number of disabling injuries per 1,000,000 man-hours, was 6.96 in 1955—a reduction of 4 percent from the year before. In the cement industry the rate was 2.66, a decrease of 21 percent from 1954. The rate in the quarry industry was 11.23, a decrease of 25 percent. Mining (other than coal) which includes many nonmetallic mineral operations, had a frequency rate of 20.52, which was 11 percent lower than in 1954. These records put cement in fourth place among the 40 industry classifications, quarries in 30th place, and mining (other than coal) in 37th place.

THE average accident severity rate for all industries reporting to the council, based on the number of days lost per 1,000,000 man-hours, was 815 in 1955—an increase of 2 percent over 1954. In the cement industry the severity rate was 1,372, an increase of 45 percent over 1954. The quarry industry, which now includes sand and gravel, had a severity rate of 2,609, almost exactly the same as in the previous year. Mining (other than underground coal) had a severity rate of 3,569 in 1955, an increase of 14 percent from 1954. This put cement in 33rd place among the 40 industry classifications, quarrying in 36th place, and mining (other than coal) in 39th place.

It is becoming more and more obvious that the safety measures being taken by the industry, especially in the Pit and Quarry field, are doing an excellent job of reducing the number of minor accidents which involve little lost time. This fact is very evident in the lower accident frequency rates. Efforts have been less successful, however, in reducing the number of serious and fatal accidents. This is apparent in comparing the 1954 and 1955 statistics; the severity rate for all industries was up in spite of a sharp reduction in frequency. It does not necessarily mean that there were actually more serious accidents—it does mean that a higher percentage of the accidents occurring were serious.

Such a situation makes it imperative for industry to concentrate more on the prevention of serious accidents—no easy task. Such accidents are sometimes preventable if such protective measures as safety hats, shoes, goggles, and guards around moving machinery are used, but more often they happen in ways which cannot be foreseen or physically guarded against. Some of the worst accidents are due to cave-ins of quarry and pit faces, or of material in bins; to tractors and cranes overturning; to carelessness in handling explosives; to careless truck drivers, etc. They are, apparently, more of a psychological problem than physical or mechanical. Most of them happen because a supervisor or a worker took a chance, and lost, Evidently any substantial improvement in present safety records must stem from the worker and his mental attitude toward safety.

AGAIN, in this editorial, we are pointing out how those companies entering some form of contest, whose records are made public as a group, are faring in their safety efforts and what they should do to improve those records. This group includes companies belonging to the National Safety Council or to various industry associations and participating in their safety contests, and also those entered in the various Bureau of Mines competitions. These companies, at least, are trying to improve, and their safety records are undoubtedly far better than those of companies which are not entered in any safety competition.

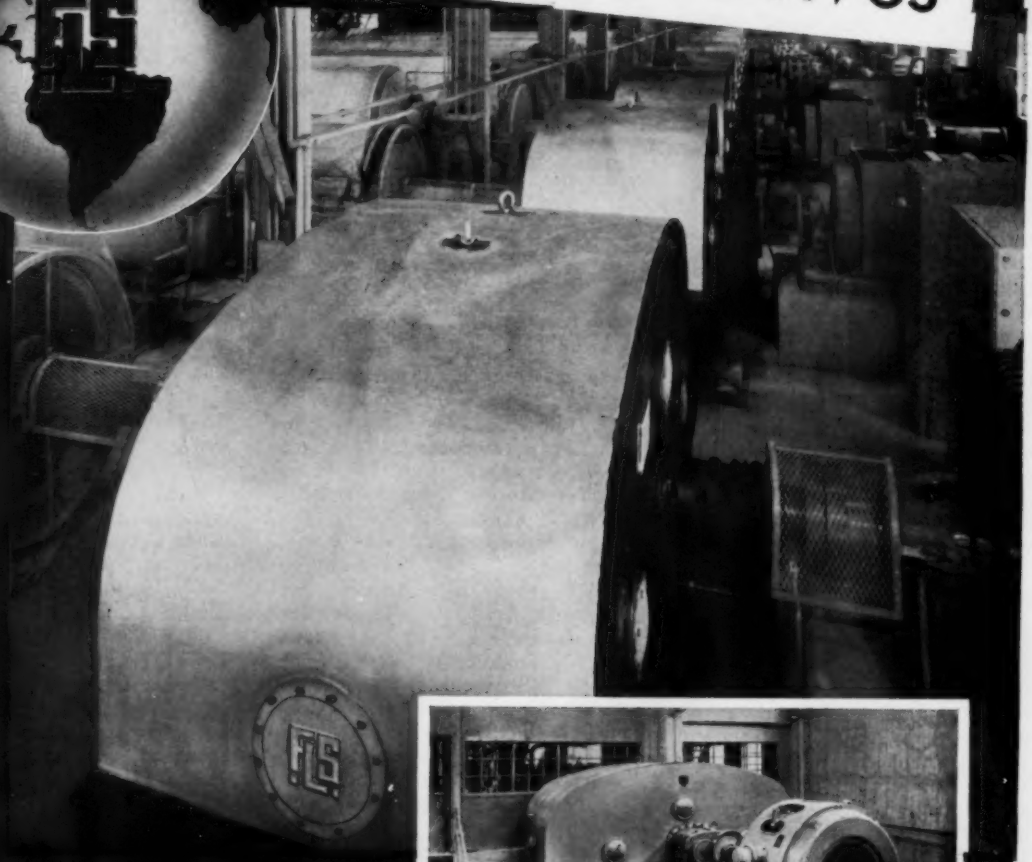
It has been pointed out repeatedly on this page that only a small percentage of the producing plants or companies in this field are entered in any safety competition; that only a few take any serious safety measures. It is estimated that only about 350 of the nearly 5,000 plants eligible are actually entered in such contests. Also, only about half of the more that 600 plants eligible for association contests are actually entered in them. These thousands of non-participating plants are nullifying the efforts of the others.

THERE are many reasons why an employer should promote safety in his plant. The most important is, of course, his moral responsibility for the safety and well-being of his employees. Accidents are expensive, costing an employer heavily in lost time, inefficiency, lowered employee morale, etc. Any steps taken to promote safety will inevitably bring an improvement in all of the above factors. A dangerous plant is usually also a dirty one, and suffers from high labor turnover and poor public relations; and it will also pay the highest insurance rates in the industry.

Again we want to warn all producers that time is getting shorter. If they do not put their own houses in order, someone else will do it for them. In recent years labor unions and the government have shown increasing interest in the working conditions in industry. Their interest includes not only the cleanliness and comfort but also the safety of workers' surroundings. It is not necessary to explain why the further entry of the government or unions into business is to be avoided at all costs. Keeping one's plant in order is a small price to pay for retaining the independence of action still remaining for employers.

Walter E. Trasoffer

Symetro Drives



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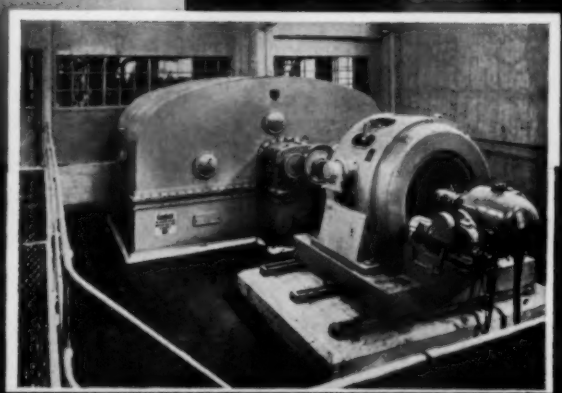
Over 7500 HP transmitted through Symetro gears direct to trunnions of raw mills in cement plant illustrated above.



Driving station for large clinker mill showing motor and Symetro gear in separate enclosure.

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Increasing Perlite Production Predicted at Producers' Meeting

PRODUCTION of perlite, a lightweight building aggregate, will reach a record high of more than 250,000 tons in 1956. This was predicted at the seventh annual meeting of the Perlite Institute, national trade association of the industry.

Sales of the expanded volcanic lava product reached an all-time high of more than 220,000 tons in 1955, topping 1954 production by 12 percent. This output represented a dollar value of over $11,000,000, as compared to $9,500,000 in 1954.

In his annual report to the Institute's membership, which represents 25 perlite producing companies in 21 states, Richard S. Funk, administrative secretary, stated that perlite today "enjoys about 40 percent of the entire plaster aggregate market and is the aggregate most widely used by the plastering industry."

Most significant recent development, Mr. Funk said, is the growing popularity of perlite insulating concrete for roof construction. Nearly 25,000,000 sq. ft. of this material was laid during the last year.

New impetus will be given this growing perlite concrete market later this summer, Mr. Funk indicated, with the publication of a comprehensive 80-page perlite concrete design manual by the institute. This pamphlet will be distributed to architects, contractors, and related groups in the construction industry. The manual will contain design data on roof decks, floor slabs, floor fills, and curtain walls.

A comprehensive study on perlite and its basic uses is currently under way at the University of Toledo, institute members were told. A brief report on progress to date was given by Archie N. Solberg, dean of research and special services of the university.

Other new research looking toward further development of horticultural uses for perlite was authorized at the meeting. Funds were made available for the establishment of research projects at universities in the South, Mid-West, and East to study the value of perlite as a soil conditioner, seed-starting and root medium, and as a packaging material for shipping potted plants and nursery stock.

Featured speaker at the annual meeting was L. H. Hobson, president of the E-Z-On Corporation of Chicago, pioneers in the manufacture and development of spray guns for the application of lightweight plaster and concrete.

Mr. Hobson described the advantages of perlite concrete in curtain wall construction. As a graphic example, he showed movies of the construction of the huge new Hillside Shopping Center near Chicago, which features throughout the type of perlite concrete sprayed curtain wall pioneered in the 30-story Alcoa Building in Pittsburgh. This wall consists of an aluminum skin and an entirely independent perlite concrete curtain wall. It has a four-hour fire rating. In the event of fire, the metal face might be destroyed, but the independent perlite concrete wall would still offer wind and fire protection.

The Perlite Institute is now preparing a pamphlet on perlite concrete curtain wall designs. This publication will feature the Alcoa Building, the Republic National Bank Building in Dallas, and the Medical Towers Building and the Texas National Bank Building in Houston, among others.

Four new officers were elected at the meeting. Elected president was J. C. Kingsbury, vice-president of F. E. Schundler and Company, Inc., Joliet, Ill. He succeeded Lewis Lloyd, president of the Alatex Construction Service of New Orleans, La., who retired after serving two two-year terms.

Kirk E. Hazelton, assistant general manager of the Perlite Division of Great Lakes Carbon Corporation, was elected vice-president.

Directors elected are C. Robert McCormick, vice-president, Whittemore Company, Boston, Mass.; and Lewis Williams, president of Perlite Industries of Arizona, Inc., Phoenix, Ariz.

Mr. Funk and Richard J. O'Heir, technical secretary, continue as co-managers of the institute.

Perlite Institute's board of directors: Norman Braun, Cleveland Gypsum Co., Cleveland, Ohio; O. Lewis Staerker, Tennessee Products and Chemical Corp., Nashville, Tenn.; J. C. Kingsbury, F. E. Schundler & Co., Inc., Joliet, Ill., new president of the institute; Frank W. Schaffer, Perlite Products Company, Primos, Pa.; C. Robert McCormick, The Whittemore Company, Roslindale, Mass.; and Lewis Williams, Perlite Industries of Arizona, Inc., Phoenix, Ariz. Kirk E. Hazelton, Perlite Division, Great Lakes Carbon Corporation, Florence, Colo., vice-president of the institute, was not present for the picture.

Reorganization of Bureau Of Public Roads Bogs Down

In an unexpected maneuver the Senate Committee on Post Offices and Civil Service incorporated, as a rider to the pending Executive Pay Act, the Administration's legislative proposal for reorganizing the Bureau of Public Roads. In a counter move the Senate leadership was successful in striking the reorganization provisions from the Pay Act. At the same time it was indicated on the floor of the Senate that the question of reorganization of the Bureau should properly be a matter for consideration by the Public Works Committee.

The Administration's reorganizational proposal would set up a new executive head in the position of Federal Highway Administrator and at the same time provide for an additional Assistant Secretary of Commerce to aid in handling administration and policy matters emanating from the expanded Federal-Aid Highway Program.

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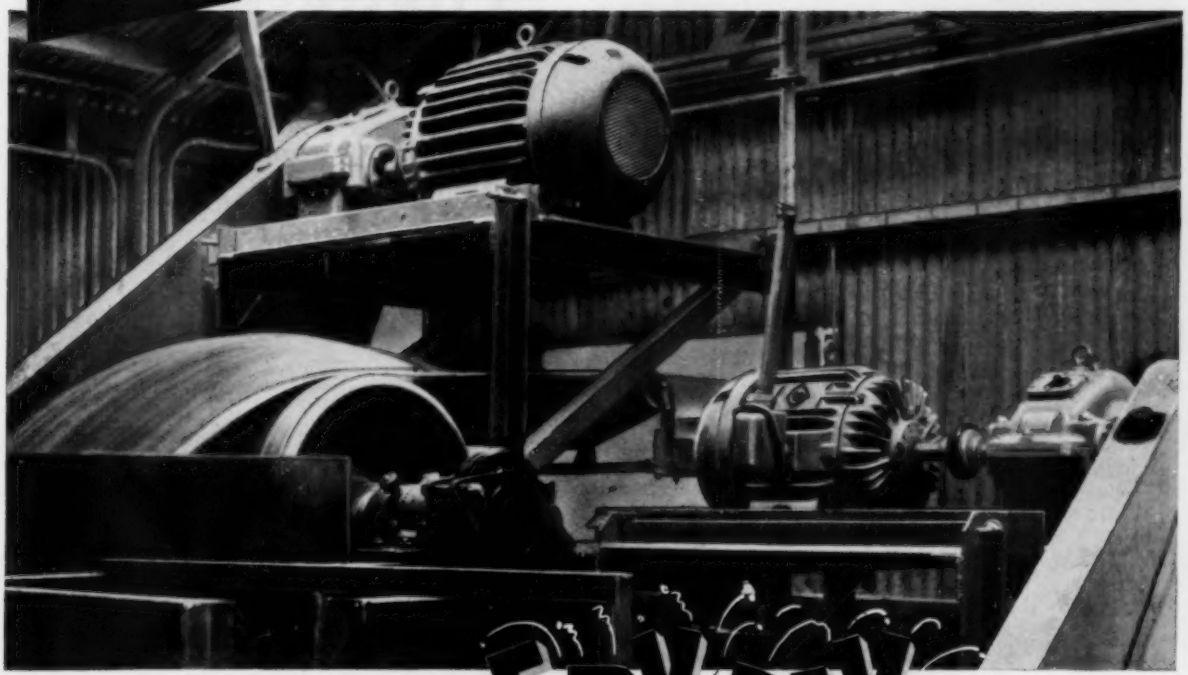

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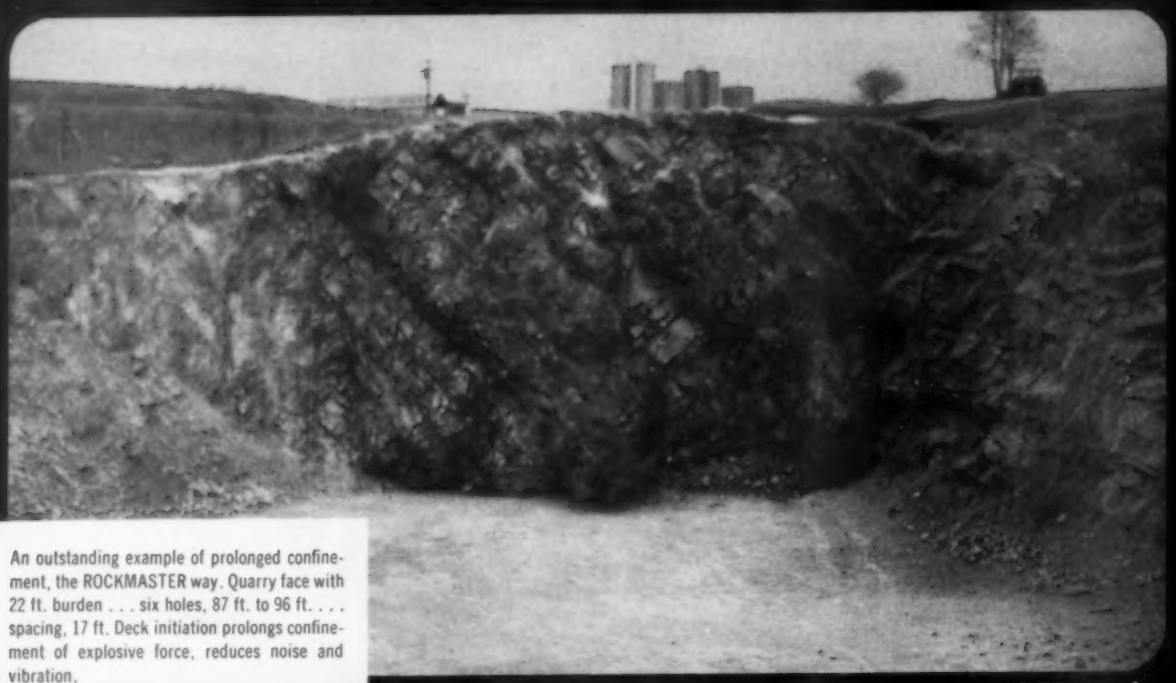
PROLONGED CONFINEMENT COUNTS



An outstanding example of prolonged confinement, the ROCKMASTER way. Quarry face with 22 ft. burden . . . six holes, 87 ft. to 96 ft. . . . spacing, 17 ft. Deck initiation prolongs confinement of explosive force, reduces noise and vibration.

Control is excellent. Blast "pushes" burden evenly . . . fragmentation is just right. Note absence of wild flying rock. And there are no fountains of wasted gases.

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- **good control**
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- **greater efficiency**
- **better public relations**

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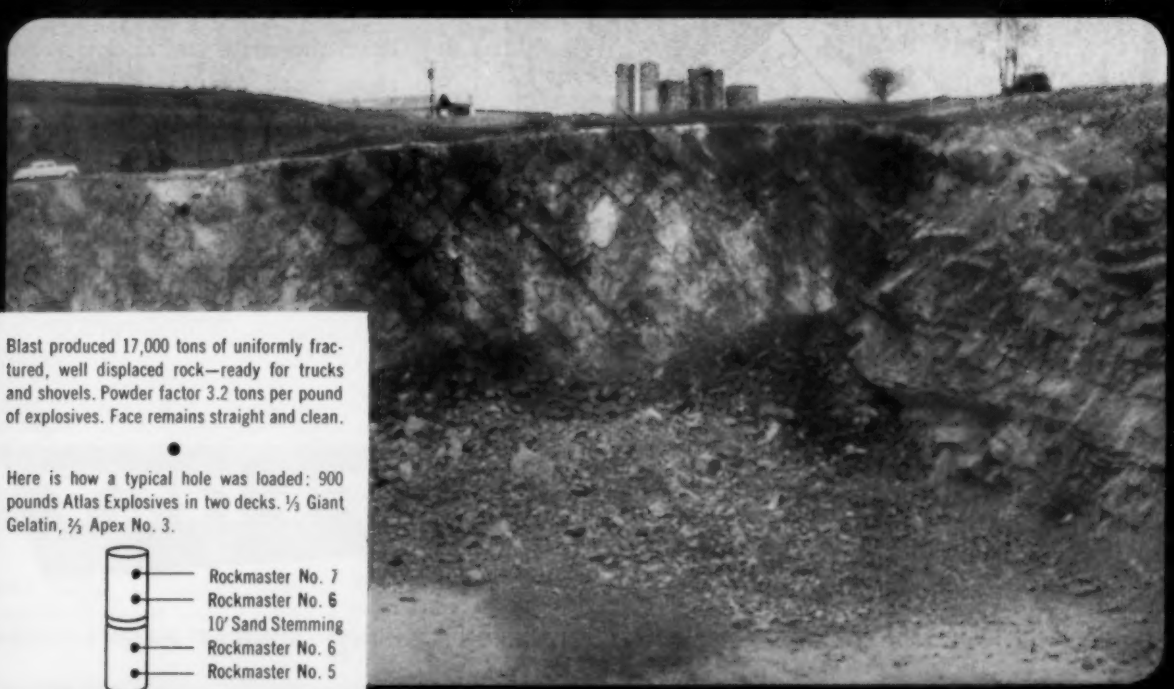
ATLAS POWDER COMPANY
WILMINGTON 99, DELAWARE
offices in principal cities



Blast produced 17,000 tons of uniformly fractured, well displaced rock—ready for trucks and shovels. Powder factor 3.2 tons per pound of explosives. Face remains straight and clean.

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Here is how a typical hole was loaded: 900 pounds Atlas Explosives in two decks. ⅓ Giant Gelatin, ⅔ Apex No. 3.

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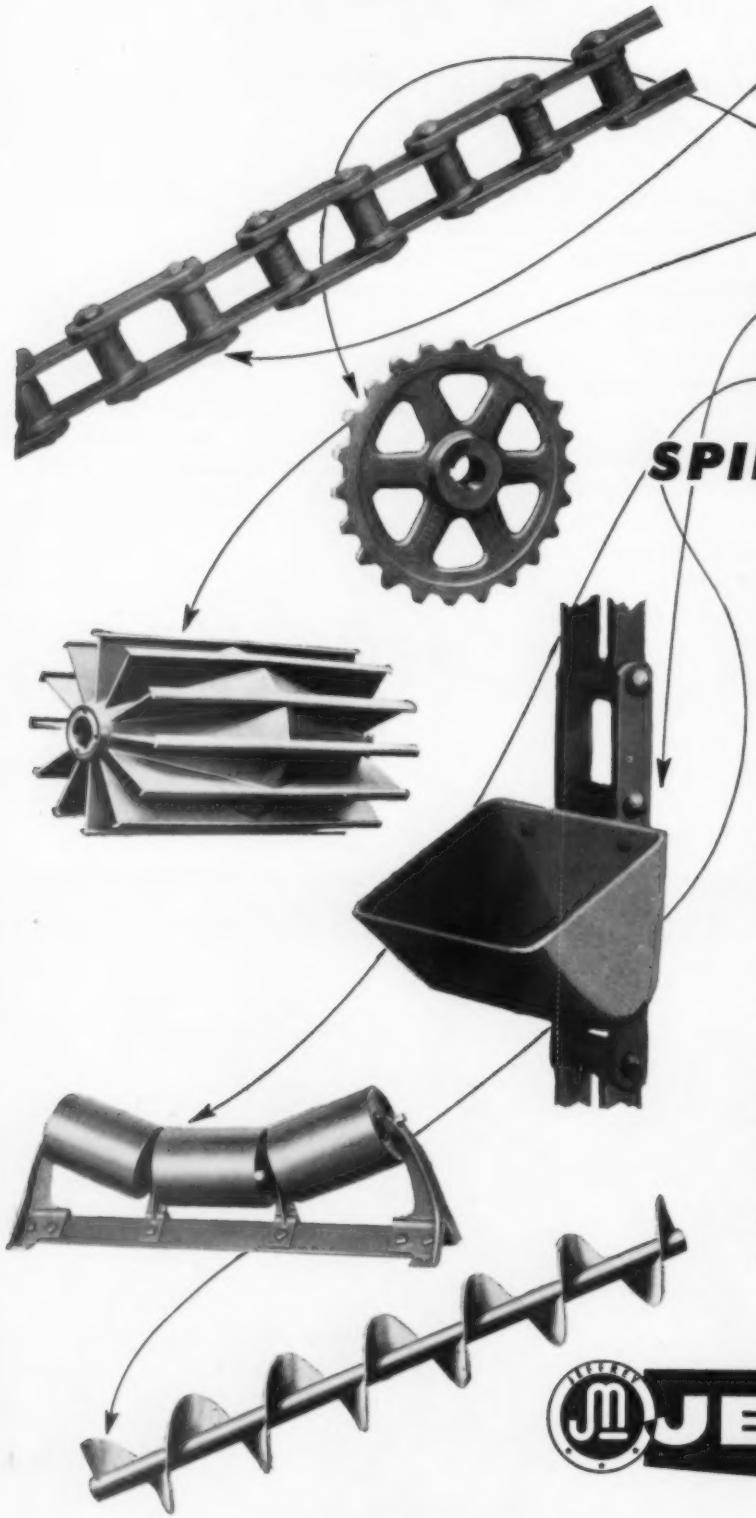

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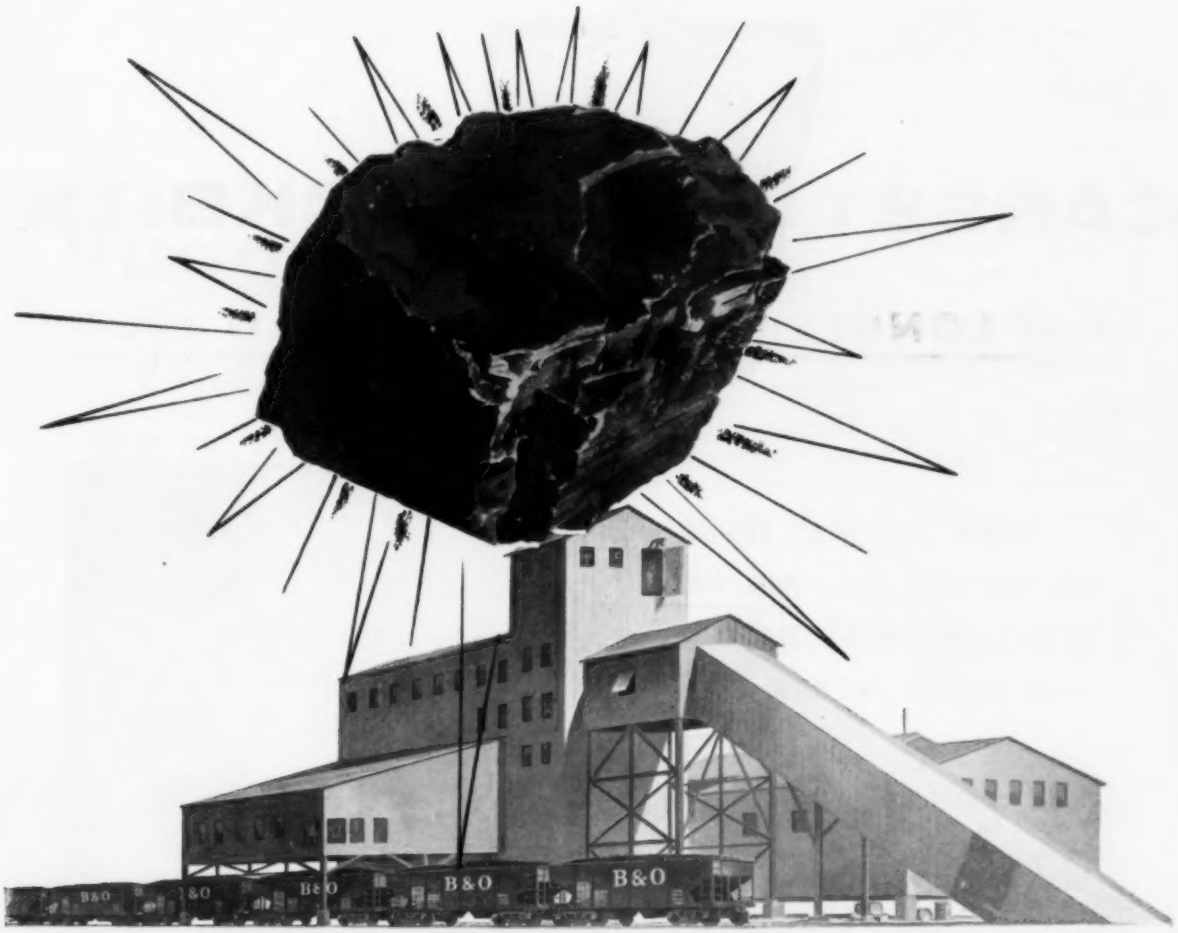

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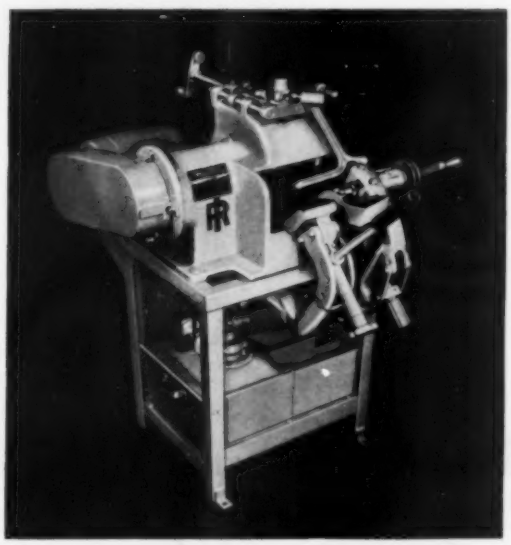

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To maintain this "good as new" performance after resharpening, it's important that the cutting faces be ground without unnecessary waste and to the proper shape. Although hand grinding can be used successfully where the number of bits sharpened per day is limited, higher production calls for a *faster* and *more precise* method of resharpening.

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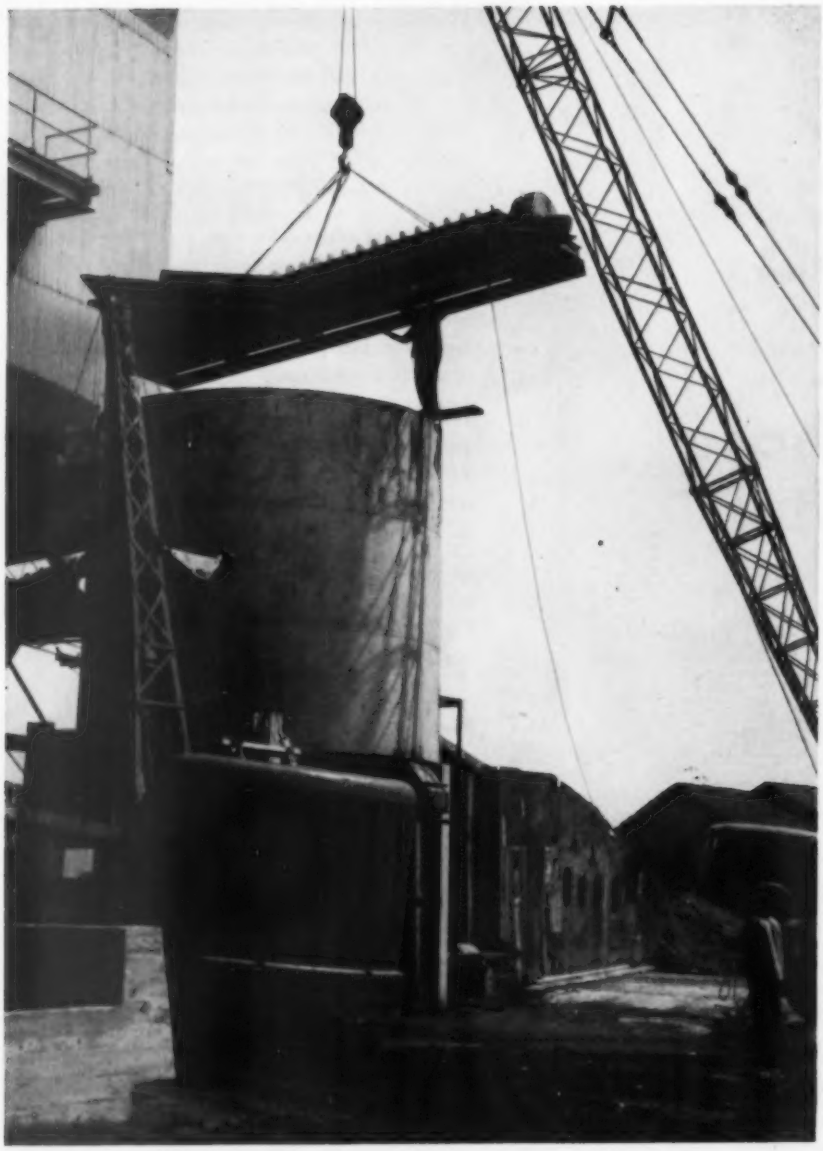

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News of the Industry

$25 Billion Highway Bill For Interstate System Signed by Pres. Eisenhower

A greatly expanded federal-state highway program became actuality as President Eisenhower signed the federal highway bill passed by both houses of Congress.

The new law provides for federal expenditure of approximately $25,000,000,000 on a 41,000-mile interstate system over a 13-year period, from 1957 to 1969, and for an increase in funds for other federal aid highways over the next three years.

Increased federal taxes on gasoline, diesel fuel, tires, trucks, buses, truck-trailers, the tax on camelback, and the new special tax on vehicles weighing over 26,000 lb. went into effect on July 1 to help finance the program. These increases are expected to yield $14,814,000,000 during the next 16 years.

Impetus for the program was given by the President in 1954, when he sent a message to the Governors' Conference meeting at Lake George, N. Y., calling for vast improvement to the nation's highway systems.

Alpha Portland Cement Co. Plans 2,000,000-Bbl. Plant At Lime Kiln, Md., Site

An announcement released recently by J. F. Magee, president of the Alpha Portland Cement Company, revealed that the firm will erect a new cement plant on property purchased from the Baltimore & Ohio Railroad at Lime Kiln in Frederick County, Md. Mr. Magee stated that users in the Baltimore-Washington-Frederick area will have available an additional 2,000,000 bbl. of cement by 1958.

Two rotary kilns 400 ft. long and 11 ft. in diameter will be installed, with ample provision for two additional kilns when expansion becomes necessary. Complete dust-collecting equipment and the latest safety devices also are included in the plans, which are being prepared by the McDonald Engineering Company of Chicago. Major machinery and electrical equipment will be supplied by the Allis-Chalmers Company. Construction will be in charge of Daniel L. Ziegler, project manager for Alpha.

The plant at Lime Kiln will be Alpha's ninth to be built since the construction of the first facility in 1895. Productive capacity of the combined plants of Alpha in 1958 will be approximately 15,000,000 bbl. annually.

Coming Events

October 1-3, 1956—Pebble Beach, Calif. National Sand and Gravel Association and National Ready Mixed Concrete Association directors' meetings. Del Monte Lodge.

October 1-4, 1956—Los Angeles. Metal mining and industrial minerals convention and equipment exhibition, American Mining Congress. Shrine Exposition Hall.

October 10-12, 1956—Springfield, Mo. Operating meeting, National Lime Association. Kentwood Arms.

October 17-19, 1956—White Sulphur Springs, W. Va. Fall meeting, National Industrial Sand Association. The Greenbrier.

October 22-26, 1956—Chicago. 44th National Safety Congress and Exposition. Conrad Hilton, Congress, Morrison, and La Salle hotels.

November 8-10, 1956—Hershey, Pa. Northeastern Mining Branch Conference, American Institute of Mining, Metallurgical and Petroleum Engineers. Hotel Hershey.

Marquette's New Plant On Cape Girardeau Site Shows Steady Progress

At Cape Girardeau, Mo., Marquette Cement Manufacturing Company's new $7,000,000 plant is rapidly rising on a site which is largely "made" land. Principal contractor is Kaiser Engineers. After the completion of fill work—achieved with earth from above the quarry—2,800 pilings were sunk by the Raymond Concrete Pile Company to support the main structure.

The 450-ft. long, 12-ft. diameter kiln will rest on bearings placed on seven foundations already completed; it will be powered by an 1,100-hp. motor. The burner building is now under construction. A prestressed concrete clay slip tank (40 ft. high by 60 ft. in diameter) has been completed. Raw materials will be fed into the kiln from this tank and another now being erected. Allis-Chalmers will supply the kiln and cooler.

Triangle Rock Products, Inc. Formed by 4-Way Merger

A merger of four allied companies in California into one rock and gravel firm was announced recently by George Thwing Jr., president and general manager of the new concern, which will be known as Triangle Rock Products, Inc.

Members of the merged corporation are the Triangle Rock and Gravel Company, a 34-year-old San Bernardino firm; Triangle Certified Concrete, Inc.; the Baker-Mitchell-Thwing Company; and the Fontana Gravel Company, owned by R. J. LaVergne and Neal O. Baker Jr. Owners of the new corporation are affiliated with the Livingston Rock and Gravel Company of Long Beach and the Arrow Rock Company of Sun Valley and Duarte.

Ground-breaking ceremonies for the $12,000,000 plant of the Medusa Portland Cement Company at Wampum, Pa., were held recently, with government officials from the area and state departments in attendance. George Develin, Pennsylvania State Department of Commerce, was the principal speaker.

Permanente Cement Company's new sixth kiln (right) will increase annual production capacity at the San Francisco Bay area (Los Altos) plant to 8,500,000 bbl., or 34,000,000 sacks of standard and special purpose cements.

Permanente Adds 6th Kiln At Los Altos Operation For 8,500,000-Bbl. Output

More cement for the West's expanding construction industry is pouring from Permanente Cement Company's huge plant near Los Altos, Calif., since a new sixth kiln—the latest unit in Permanente's $35,000,000 expansion program — has gone into production.

"Installation of the sixth kiln and related equipment was rushed to completion to meet requirements of the 1956 construction season," said Henry J. Kaiser, chairman of the board and president, "in order that Western builders would not again be plagued with the cement shortage that seriously limited last year's construction activities."

As the big kiln—12 ft. in diameter by 450 feet long—was fired for operation, Permanente's production capacity was increased by 1,500,000 bbl. per year, raising the annual capacity of the plant to 8,500,000 bbl. or 34,000,000 sacks of standard and special purpose cements.

In addition to the new kiln, which is among the largest now used in the cement industry, and one of the largest units of moving machinery in the world, complementary equipment such as two 1,000-hp. grinding mills and additional belt conveyors have been installed to handle the increased flow of raw materials.

The electrostatic dust collection system of the plant has also been expanded to service the new kiln. Clinker storage capacity has been increased by 200,000 bbl., and the bulk loading tanks have been expanded by 15,000 bbl. to facilitate loading the bulk delivery truck fleet. Additional Fuller-Kinyon pumping equipment for loading Permanente's bulk carrier steamships has been installed in the ocean shipping terminal at the Port of Redwood City.

This is the third major expansion of the Permanente plant since it first began operations in January, 1940, with an annual capacity of 2,500,000 bbl. of cement. Within a year, capacity was doubled to 5,000,000 bbl., and further expansion in 1951 increased the total to 7,000,000 bbl. annually.

Permanente is presently expanding into Southern California, with the construction of a 2,500,000-bbl. plant near Lucerne Valley, Calif. This modern plant is scheduled to begin operations late this fall.

Expansion eastward also has been started with plans for a cement manufacturing plant near Albuquerque, N. M. This is the first step in a proposed $10,000,000 investment in New Mexico, including a plant with an annual capacity of 1,400,000 bbl. of cement. Present schedules call for initial operation of the plant during the fall of 1957.

At a recent special directors' meeting of the Ideal Cement Company, Harry B. Bolton was named administrative vice-president. Mr. Bolton had been named general sales manager in February, and will retain that post.

Gray Succeeds Goldbeck On Staff of N.C.S.A. As Engineering Director

By unanimous action of the executive committee of the National Crushed Stone Association, Joseph E. Gray has been appointed engineering director of that group, effective August 1. In his new association post, Mr. Gray succeeds A. T. Goldbeck, whose retirement marked 31 years of service in that capacity. Mr. Goldbeck will maintain a connection with the association as an engineering consultant.

Joseph E. Gray

Holding bachelor and professional civil engineer degrees from George Washington University, and a former teacher of a course in highway engineering at that institution, Mr. Gray joined the N.C.S.A. staff in 1928 as laboratory engineer. He remained in charge of the laboratory's research and test programs until 1945, when he was appointed to the post of field engineer.

Having a wide acquaintance with state and federal highway agency personnel, and the problems confronting them in the matters of material and testing, Mr. Gray is regarded as exceptionally well qualified to assume the responsibilities of his new duties with the association.

At a meeting of the board of the Olympic Portland Cement Company, Ltd., it was decided to increase the annual capacity of the firm's plant at Bellingham, Wash., from the present 1,000,000 bbl. to 2,000,000 bbl.

The simple, effective, economical way to wash and classify material!

THE combination of equipment shown above is an Eagle Complete Washing-Classifying-Dehydrating Section. These Sections are designed to meet capacity and product requirements of any producer. They are a "package unit"; can be set down and integrated with any plant.

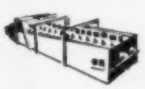
There is NO equipment or combination of equipment that comes even close, as far as ease of operation, economy and overall results are concerned. Eagle pioneered material washing and classifying and has the broadest experience in the field.

Material, in this case, is flumed to the Eagle Water Scalping-Classifying Tank. The power-operated valves assure removal of excess water, and classification within the tank by utilizing natural settling rate of particle sizes. Gated splitters below each valve, enable throwing desired percentage of each valve's bleed to multiple-cell Collecting-Blending Flume below splitters. The multi-cell Flume below the tank routes the desired gradations to three Eagle Screw Washer-Classifier-Dehydrators. They wash and further dewater the material, producing concrete sand, mason sand and plaster sand. Or, two screw units can produce concrete sand while one produces mason sand—any combination you want—utmost flexibility. The cost? Mere pennies per ton of material to meet specifications!

THE EAGLE LINE

COARSE MATERIAL WASHERS

FINE MATERIAL WASHERS


LOG WASHERS

WATER SCALPING—CLASSIFYING TANKS.

"SWINTEK" DREDGE LADDERS

CUTTER HEADS

COMPLETE DREDGES

BREAKER BALLS & PILE HAMMERS.

Send for YOUR Copy of new 44-Page Catalog 55.

EXPERIENCE, PROGRESS, SERVICE, SINCE 1872

EAGLE IRON WORKS

133 HOLCOMB AVE., DES MOINES, IOWA

WHAT'S NEW *in* BRUNNER & LAY *Products*

"600" COUPLING | 3½" ROK-BITS | 3" ROK-BITS | 2¾" ROK-BITS | 2½" ROK-BITS | "600" THREAD

BRUNNER & LAY "600" ROK-BITS — Bits fit directly on G-D and other similar type threads. Non-rifling "X" design GIVES YOU A ROUND HOLE TO LOAD. (3" and 2¾" bits also in cross types). Write for folder BDC-56.

4½" ROK-BITS | J-7.50 COUPLING | 4" ROK-BITS | J-7.50 THREAD | 3½" ROK-BITS

BRUNNER & LAY J-7.50 ROK-BITS
Bits fit directly on J-7.50 thread, no adapter needed. Non-rifling "X" design. Wider chip channels. Ask for bulletin BJ756. Above bits also in 1000 series.

2¼" ROK-BITS | 2" ROK-BITS

BRUNNER & LAY "400" ROK-BITS
Non-rifling "X" design. No adapter needed.

BRUNNER & LAY 6" ROK-MASTER for use with I-R Quarrymaster drill. 2 x 3 A. P. I. threads.

6-in. Brunner & Lay Rok Bit for use on down-the-hole I-R Drillmaster. Wider chip channels permit discharge of more and larger chips. Request 6-in. Bit Bulletin.

Intra-Set Drill Steel—carbide insert—gauge sizes: 1¼" thru 2¼"

Carbide Rok-Bits—cross, "X" or chisel types—gauge sizes: 1¼" thru 6"

Alloy or carbon drill steel

Brunner & Lay Products

Brunner & Lay, Inc.
9300 King St.
Franklin Park, Ill.

Brunner & Lay Rock Bit of Philadelphia, Inc.
2514 East Cumberland St.
Philadelphia 25, Pa.

Brunner & Lay of Los Angeles, Inc.
2425 East 37th St.
Los Angeles 58, Calif.

Brunner & Lay, Inc.
150 Leslie St., Dallas, Texas

Brunner & Lay Rock Bit of Asheville, Inc.
Sweeten Creek Rd., Asheville, N.C.

Brunner & Lay of Portland, Inc.
660 N. Tillamook St., Portland 12, Ore.

American Mining Congress Scheduled for Oct 1-4 In Los Angeles Shrine Hall

More than 6,000 persons are expected to attend the 1956 metal-mining and industrial-minerals convention and equipment exhibit of the American Mining Congress to be held October 1 to 4, 1956, in Los Angeles. Convention sessions and the show will be concentrated in the huge Shrine Exposition Hall, and more than 160 exhibitors have signed to display their wares.

Garner A. Beckett, president of the Riverside Cement Company, is the chairman of the general committee; Robert Mitchell, president of Consolidated Rock Products Co., heads the welcoming committee.

General and operating sessions on industrial nonmetallic minerals are scheduled for October 2 and October 3. Co-chairman of these sessions are W. W. Mein Jr., president of the Calaveras Cement Company, and D. L. Marlett, vice-president of Great Lakes Carbon Corporation. Production and processing problems involving gypsum, diatomaceous earth, perlite, limestone, and dolomite will be discussed. Beneficiation of gravels by heavy-media separation, gilsonite mining, and calcining of pelletized cement raw materials are other topics to be expounded.

October 5—the day following the close of the convention proper—will be devoted to field trips into southern California. Visitors will inspect the Crestmore plant of Riverside Cement Co., the 1,000-t.p.h. sand-and-gravel plant of Consolidated Rock Products Co. at Irwindale, and the diatomaceous-earth operations of Great Lakes Carbon Corp. at Palos Verdes.

Trinity Portland Expansion Adds 1,250,000 Bbl. Yearly

New facilities installed to increase the capacity of the Trinity Portland Cement plant at Fort Worth, Tex., by 1,250,000 bbl. annually are scheduled to be in operation soon.

This expansion was necessitated by the extraordinary growth of construction activities in the area served by Trinity. Total yearly capacity, with the added output gained through the expanded facilities, will be about 3,250,000 bbl.

Vista-Rock Products, Inc., an affiliate of Ready Mix Concrete Co., Reno, Nev., has started operation of a $250,000 sand and gravel plant near Sparks, Nev.

Preferred for Dependable 'Round-the-Clock Pit Operation

Built-in economy that assures low maintenance, long machine-life, and sustained high output — that's why Bucyrus-Eries are preferred in the pits. It's a combination that's tough to beat for typical long range work . . . the result of Bucyrus-Erie's constant close attention — during manufacture — to the little things that mean outstanding quality.

Take the triple-tested steels that go into Bucyrus-Eries, for example. Hammer forging, annealing, heat treating, case hardening, flame hardening, and stress-relieving processes are applied — each where it contributes most to strength, toughness, and hardness. The most modern arc welding methods are used to produce highest quality fabricated parts.

Skilled manufacturing is only one of many Bucyrus-Erie quality features that add up to more actual working time each shift — and to greater output and profit. You get top quality design, too: easy adjustments and accessibility speed maintenance . . . balanced, smooth digging cycles mean no overstressing of any parts . . . and conveniently grouped, easily manipulated controls add to digging time by cutting waste motion and reducing operator fatigue. For complete information on Bucyrus-Erie shovels and draglines from ⅜- to 4-yd. capacity, see your Bucyrus-Erie distributor today. For information on larger sizes, write us direct.

214E56C

Bonus Quality *saves you money*

Skilled chemists and physicists in the company's own metallurgical laboratory regularly study new materials, alloys, and treating processes to determine their suitability for application to Bucyrus-Erie machines. Here a laboratory technician burns chips from a foundry test bar to determine carbon content of the steel. Each heat is triple-tested to ensure meeting specifications.

BUCYRUS-ERIE CO.
SOUTH MILWAUKEE, WISCONSIN

Announcing...

THE ALL-NEW COMPLETELY REDESIGNED Cedarapids JUNIOR TANDEM

Here's the *brand new* Cedarapids Junior Tandem, completely redesigned from hopper to delivery conveyor.

Many new features added to the ruggedness and stamina of the original Junior Tandem make this time-tested "workhorse of the Iowa line" a more versatile plant, with greater capacity and lower maintenance.

Use the new Junior Tandem, with your choice of crushers, to meet any pit condition . . . or with a Cedarapids Portable Primary for low-cost rock crushing.

with these BIG NEW FEATURES

YOUR CHOICE OF CRUSHER SIZES

Whatever your pit conditions, you can meet crushing requirements right on the nose! With high crushing percentages, use the 10″ x 36″ jaw crusher for extra primary capacity. In average conditions, choose the 10″ x 24″ jaw crusher. Meet normal secondary reduction requirements with a 24″ x 16″ roll crusher, or where percentages of fines are high, use the 30″ x 18″ roll crusher. Mix 'em and match 'em for *balanced production on your job!*

BIGGER SCREEN

The width of the horizontal vibrating screen has been increased 6 inches, and a half deck has been added. Now the 42″ x 10′, 2½-deck screen assures much higher screening capacity, plus greater flexibility for producing from one to three products simultaneously in sizes from 2″ road ballast down to minus ¼″.

CEDARAPIDS "BIG PLANT" FEATURES

In the new Junior Tandem are many features found in larger Cedarapids plants—sand ejector screw; washing spray bars (optional); new mono type elevating wheel; delivery conveyor backstop; belt wipers; self-cleaning pulleys; new type adjustable eccentric on reciprocating feeders; larger hopper; separate clutch control on screen.

Write for details today! Only a *complete* description of every improved feature on the new Junior Tandem can show you what this plant can do on your job. Write for information, or see your nearest Cedarapids distributor for design details and specifications.

IOWA MANUFACTURING COMPANY
Cedar Rapids, Iowa, U.S.A.

Dewey Portland Cement Plans $10,000,000 Facility On 2,000-Acre N.M. Site

According to an announcement issued by J. J. O'Connell, co-holder of about 2,000 acres of land near Placitas in the Albuquerque area, the Dewey Portland Cement Company will erect a multimillion-dollar cement plant on the site, which is to be purchased by the firm.

It was indicated that the plant, which will represent an investment of $10,000,000, will have an output of approximately 1,250,000 bbl. of cement annually. Abundant limestone resources are available in the area. The proposed facilities will be designed for the dry process.

Dr. F. D. Ordway Jr. Named Director of P.C.A. Fellowship

Hubert Woods, director of research for the Portland Cement Association, has announced the appointment of Dr. Fred D. Ordway Jr. as director of the P.C.A. Fellowship at the National Bureau of Standards, Washington, D. C., effective July 1. Dr. Ordway has been acting director of the Fellowship since 1954, following the retirement of Dr. R. H. Bogue.

Dr. F. D. Ordway

The Fellowship operates as an integral section of the Research Department of the Portland Cement Association. Its investigations are co-ordinated with a widespread research program conducted by the association at its research and development laboratories in Skokie, Ill. Dr. Ordway joined the Portland Cement Association Fellowship at the National Bureau of Standards in 1948, and became acting director of the Fellowship in 1954.

Drivers last longer...

when heavy-duty trucks use J-M Brake Blocks

Experienced operators know that when their vehicles are equipped with Johns-Manville Brake Blocks they can handle crushing loads without personal danger.

That's because these rugged, durable J-M Brake Blocks are engineered for the job . . . and designed for dependable performance plus maximum service life on trucks, shovels and heavy machinery.

They are "standard parts" on many famous makes of heavy-duty units. For fast, easy replacement, they are now available in Johns-Manville Assembled Sets that put new safety into your equipment.

See your Johns-Manville Distributor for data on J-M Brake Linings and Clutch Facings for industrial equipment, or write Johns-Manville, Box 60, New York 16, N. Y.

Johns-Manville Industrial Friction Sets are available in a wide range of molded or woven, rigid or flexible asbestos materials.

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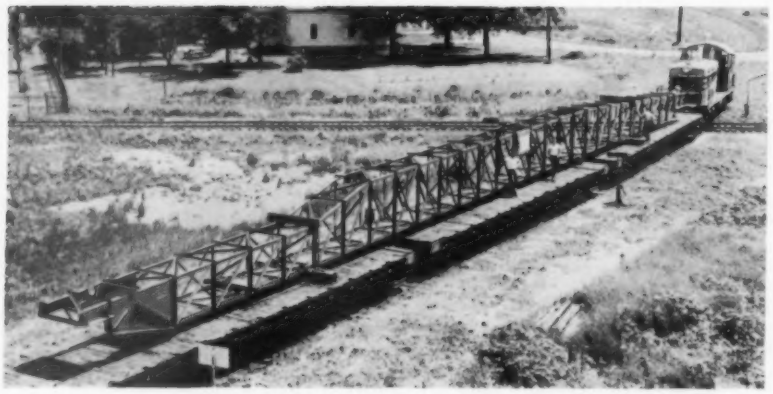
Johns-Manville

INDUSTRIAL FRICTION MATERIALS



● This giant ship unloader boom, requiring special swivel mountings on three flat cars, was recently shipped in one complete section from Stephens-Adamson Mfg. Company's Aurora, Ill., plant. Designed and built for the Erie Sand Steamship Company, Erie, Pa., the boom will be installed aboard the self-unloading sand dredge "Lakewood." This vessel is presently being converted for sand dredging operations in the Great Lakes. Officials expect to put the "Lakewood" in operation this fall.

Cement Plant Glossary

Another PIT AND QUARRY Exclusive!

This 19 page booklet lists and defines colloquialisms, technical and operational terms most frequently used in cement plants throughout the United States and Canada. It is published exclusively by Pit and Quarry and is available to you at the very nominal price of 25 cents a copy.

This informative glossary was compiled by Mr. C. F. Clausen and Mr. W. R. Dersnah of the Portland Cement Association. Their main reason for creating it was to standardize cement plant terminology and define it so that it could be understood by any person who had occasion to come into contact with the cement industry, either directly or indirectly.

Just tell us the number of copies you want and we will be happy to fill your request promptly. Please send your money along with your order to expedite handling.

PIT AND QUARRY PUBLICATIONS, INC.

431 S. Dearborn St. Chicago 5, Ill.

Shipments of Israeli Cement Ease Critical U. S. Shortage

According to press reports from New Orleans, the 1,000,000th bag of cement was received there from Israel recently. This consignment was shipped by the American Barge Company to Chicago, where it was slated for distribution to consumers.

Cement exports from Israel to the United States were launched last year. It was stated by officials of Solcoor, Inc., New York representative of the manufacturer, Nesher Cement Works of Haifa, that another cargo is Israeli cement will reach New Orleans soon for distribution among Gulf area consignees.

Mississippi Cement Concern Plans to Start Construction

Ground breaking ceremonies for the $3,750,000 plant of the Mississippi Valley Portland Cement Company near Vicksburg, Miss., were scheduled for an early date at a statewide sales seminar held in Raleigh, Miss. It was stated that if stock sales continued at the same high level established during the 40 initial selling days of the new company, actual work on the plant could begin as scheduled.

Strategically located on the Yazoo River, 10 miles above Vicksburg, the new plant will have a capacity of 1,500 bbl. per day. This will be the first operation in the state to plan for the manufacture of oil well cement. R. W. Hyde Jr., Jackson, Miss., is president of the firm.

• Correction

We regret that in our July issue, T. E. Stumm, who is vice-president in charge of production in pits and quarries of Consumers Co., Illinois division, was incorrectly identified as T. E. Stone.

GENE FEISE has been appointed traffic manager for the Calaveras Cement Company, San Francisco, Calif.

Hauser to Superintend New Milwaukee Operation Of Marquette Cement

Karl V. Hauser has been appointed superintendent of the Marquette Cement Manufacturing Company's new $7,000,000 plant near Milwaukee, Wis.

Construction of the Milwaukee facilities is reported to be proceeding on schedule, and the plant is expected to be completed by December 1. Production capacity will be 1,250,000 bbl. per year.

It was also announced that Marquette's net income for the first half of 1956 was $3,189,000, up 11 percent over the $2,868,000 for the same period in 1955.

Gordon Tongue Elected Member of P.C.A. Board

Gordon Tongue, president of Northwestern Portland Cement Company, Seattle, has been elected to the board of directors of the Portland Cement Association, a national organization supported by more than 70 companies manufacturing portland cement in the United States and Canada.

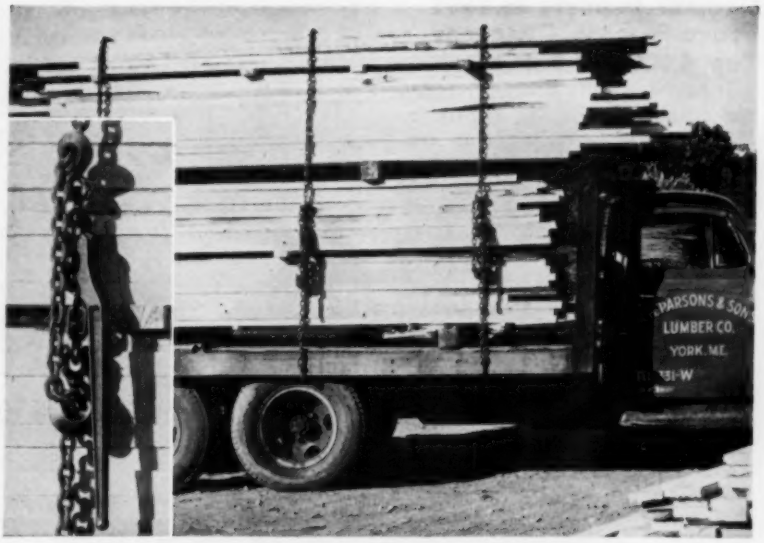
Mr. Tongue has been connected with the cement industry in the Pacific Northwest since 1913. He fills a vacancy on the association's board created by resignation of Chester M. Reitze, formerly president of Superior Portland Cement, Inc., also of Seattle. Mr. Tongue has been active in civic organizations and is presently a member of the Regional Executive Committee of the Boy Scouts of America.

Penny-a-Ton Plan Urged To Relieve Engineer Shortage

E. D. Brown, manager of the National Gypsum Company at Ingonish, Nova Scotia, has stated that mining industries in the province could raise $100,000 annually for training engineers if they contributed one cent for every ton they produced.

The statement was made at the annual meeting of the Mining Society of Nova Scotia. Coal, gypsum, barites, salt, and limestone industries in the province produce about 10,000,000 tons annually, it was pointed out; and if the companies contributed one cent a ton, the contributions would be of great help in combatting the shortage of trained engineers.

William Pfleeger Jr., has been appointed executive assistant of the Penn-Dixie Cement Corporation. He will serve as assistant to Fred L. Doolittle, newly elected executive vice-president.



LOADS SAFELY BOUND

Safety conscious contractors tie down their truck loads of construction material with Laughlin Load Binders! There's no chance for injury or loss because the smooth lever action takes up 4½-inches of chain—holds lumber, piles, pipe, sheet material positively—safely! This tough, drop forged and heat treated binder is the most versatile available—and it's made for the strongest chain! One Laughlin binder will handle four chain sizes! Merely switch Clevis Grab Hooks to fit the chain you're using! Keep Laughlin Clevis Grab Hooks on hand to fit your chains—then there'll be no delays!

100% HOLDING POWER

When genuine Crosby* Clips secure wire rope rigging and tackle, men and materials are 100% safe! Positive gripping power gives confidence to workers, and confidence means top working efficiency. High strength steel is formed into the world-famous "Red U-Bolt"*. High wings on the drop forged base hold the rope securely in place. Look for the "Red U-Bolt"! You'll see it used on ropes of all sizes, because only Crosby offers a complete range of sizes to fit ⅛" to 3" diameter ropes!

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AN EYE FOR SAFETY!

. . . that's the eye design that was originated by Laughlin engineers. The ear of a shackle only one size smaller slips through the pear shaped eye—a design that conforms more closely to the line of pull—makes Laughlin Turnbuckles stronger and safer! Hex ends on the hefty body make take-up fast and easy. Weldless, hot galvanized turnbuckles, forged from special steel, are available from Crosby-Laughlin Distributors in a variety of end fittings and in sizes from ¼" x 4" to 2¾" x 24"!

Stocked and sold by leading distributors everywhere

CROSBY-LAUGHLIN DIVISION

American Hoist and Derrick Company

FORT WAYNE, INDIANA

Cement Imports in 1955 From Foreign Concerns Top 4,000,000-Bbl. Mark

It has been quite obvious to everyone connected with the cement industry, either as a producer, consumer or user, that imports of cement from foreign countries into the United States have jumped sharply in the last year or two. It has not been at all unusual, for example, to find cement from Israel, South America, and Canada being used in a Midwestern city; and along the seacoast and the Great Lakes the variety has been much greater. In a large Ohio city not long ago it was reported that cements from 16 different countries were being used. Preliminary figures now available from the U. S. Bureau of Mines show that imports of Roman, portland, and other hydraulic cements in 1955 totaled 4,550,953 U. S. (376 lb.) bbl., valued at $12,712,524. This is believed to be a new record.

Imports in 1951 were 921,953 bbl.; in 1952 they were 475,986 bbl.; and in 1953 the total was 386,051 bbl. In 1954 there was little change, the total being 371,558 bbl. The leading exporters that year were Belgium-Luxemburg with 194,596 bbl.; Canada with 67,588 bbl.; and West Germany with 52,953 bbl. Other exporters were: Sweden (22,498 bbl.); United Kingdom (14,103 bbl.); Yugoslavia (12,919 bbl.); Mexico (7,250 bbl.); French Morocco (500 bbl.); and France (51 bbl.).

In 1955 however, imports jumped sharply to a total of 4,559,953 bbl. The Belgium-Luxemburg duo again led, with 1,468,341 bbl., followed by West Germany with 1,230,608 bbl., Canada with 724,100 bbl. Sweden with 428,820 bbl., Mexico with 266,907 bbl., the Dominican Republic with 149,364 bbl., Yugoslavia with 109,506 bbl., Colombia with 56,331 bbl., and Israel with 52,497 bbl. Other exporters were: United Kingdom (27,476 bbl.); Denmark (24,580 bbl.); Finland (12,899 bbl.); Portugal (2,990 bbl.); The Netherlands (1,759 bbl.); and Japan (1,186 bbl.).

● This Page walking dragline is doing the dual job—stripping overburden from a limestone deposit and overcasting it beyond the quarry face into the worked-out area—in one operation. Owned and operated by the Diamond Portland Cement Company at Middlebranch, Ohio, this machine has an 180-ft. boom and an 8½-cu. yd. Page Automatic dragline bucket. It is shown stripping 65 ft. of overburden from 6½ ft. of limestone.

Home Building Films Shown In Russia by Trade Groups

The National Association of Home Builders sponsored a tour of the Soviet Union this summer, to present to Russian housing officials six industry-produced motion pictures illustrating housing, building materials, and construction methods used in the United States.

The films were furnished the National Association of Home Builders by the Wire Reinforcement Institute, the Vermiculite Institute, the National Gypsum Association, and three other trade organizations.

Canadian Cement Capacity To Realize 46 Percent Gain

With a total of about $100,000,000 now being spent by Canadian, European, and U. S. investors in the expansion of existing cement mills and the construction of new plants, the growth of Canadian cement capacity is realizing its greatest surge in the history of the industry.

The seasonal cement shortages suffered regularly by Canada's rapidly growing construction operations are expected to be worse this year. While the cement productive capacity has increased by more than 600 percent in the last 20 years, it has never caught up with demand. To augment domestic production, imports of about 2,500,000 bbl., or 10 percent of the Canadian volume, have been required.

With cement consumption up 11 percent in 1955 over the preceding year, and shipments showing a gain of nearly 23 percent this year, the current cement plant projects, while showing promise of a 10 percent increase in capacity by the end of 1956, are expected to provide a country-wide increase of 46 percent by the end of 1957—including a gain of 90 percent in the provision of Ontario alone.

Production from Canada's 12 cement plants in 1955 was 25,180,000 bbl. The expanded capacity being added to that figure is reported to have been undertaken not only to accommodate the immediate demand by heavy construction but also to supply expected gains in the concrete products field (in which autoclaving is regarded as a major factor), and to meet the potential expected from the increasing use of prestressed concrete.

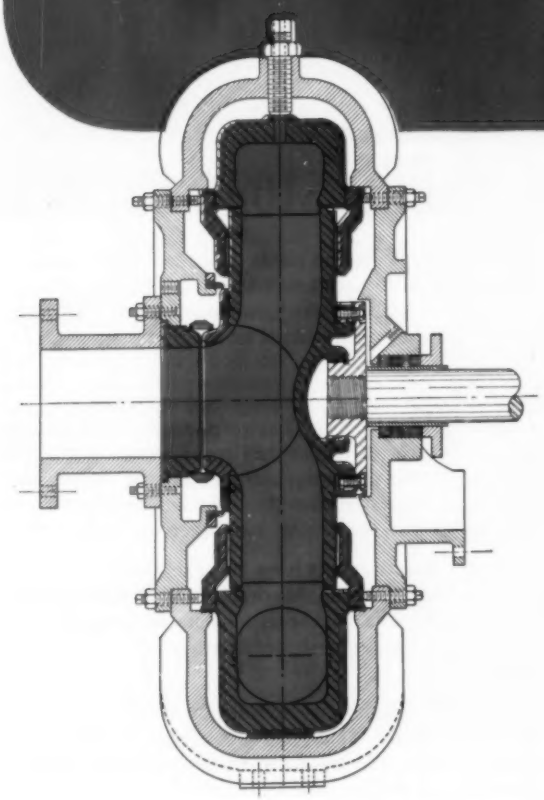
A tabulation of new and expanded capacity which is due for realization by the end of 1957 is shown by location below.

Location	Company	Capacity
Ontario		
Beechville	Canada Cement	1,500,000 bbl.
Clarkson	St. Lawrence Cement	3,000,000
St. Mary's	St. Mary's Cement	750,000
Picton	Lake Ontario Cement	1,800,000
Saskatchewan		
Regina	Saskatchewan Corp.	850,000
Alberta		
Edmonton	Inland Cement	1,800,000
British Columbia		
Bamberton	British Columbia Cement	500,000
Vancouver	La Farge Group	1,500,000
	Total	11,700,000

THERE'S ALWAYS A REASON WHY!

Here's The Reason

USERS SAY THEY LIKE THOMAS PUMPS



Cross-section shows in red the "guts" of a THOMAS PUMP, (all parts here assembled into a unit) made of Thomas NI-HARD . . . . . the most durable, long lived, economical sand and gravel pump ever manufactured.

In a series of testimonial letters published in this magazine for many months, THOMAS "DURABLE" PUMP USERS in their own words have stated the highlights of their actual operating experience. Summed up, all of these Thomas Pump owners have said:

- THOMAS PUMPS tremendously increase service life.
- THOMAS PUMPS likewise increase sand and gravel production.
- THOMAS PUMPS greatly reduce downtime for maintenance.
- THOMAS PUMPS cut maintenance costs to the bone.
- THOMAS PUMPS reduce overall pumping cost of sand and gravel

There is a reason for these phenomenal results. The reason is: NEW, MODERN THOMAS PUMP DESIGN—PLUS PUMP PARTS MADE FROM MATERIALS HIGHLY RESISTANT TO ABRASION. (See cross-section at left).

This material is THOMAS NI-HARD, a closely controlled and superbly hard nickel-chrome-iron alloy, which insures the finest performance ever given by ANY SAND AND GRAVEL PUMP. That's not our statement. It is a summary of the views of hundreds of owners of THOMAS DURABLE PUMPS in 6-inch to 16-inch sizes. Look for more letters from THOMAS PUMP owners which we will publish in the future.

YOU CANNOT BUY, AT ANY PRICE, A MORE DURABLE PUMP FOR SAND AND GRAVEL—YOU CANNOT BUY ONE THAT WILL MAKE YOU AS MUCH MONEY.

THOMAS FOUNDRIES, *Inc.*

P. O. BOX 1111 . . . . BIRMINGHAM, ALABAMA

CAL-WIC® INDUSTRIAL SCREENS

...and 10,000 stone cutters

The quality of the early macadam roads depended largely upon the size of the mouths of the workmen who made them. For the pavement's originator, John Loudon McAdams, based his method on the use of uniform-sized stones that were less than 2" in diameter.

Since there was no accurate way of sizing road aggregate, McAdams relied upon his workers. Each stone cutter had to put his stones into his mouth before they could be accepted. If a stone was too big for the cutter's mouth, it was too big for the road. Obviously, the system was slow and inaccurate since some workers had huge mouths, and others no teeth.

Fortunately, today's road builders have no problem in getting accurately-sized aggregate. Modern equipment can screen tons of this essential material in one day—more than could be done by 10,000 of McAdams' stone cutters in a period of weeks.

You'll find that Cal-Wic Industrial Screens are ideally suited to modern screening machines. That's because they have the complete accuracy, extra durability and sustained resistance to abrasion, vibration and fatigue that means satisfaction to aggregate users and profit to operators.

Why not get the full story on how Cal-Wic Screens can help you? Just contact the nearest sales office shown below.

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INDUSTRIAL SCREENS
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J. B. John of Medusa, Cement Industry Leader, Dies at 86 in Cleveland

Jonathan Blaine John, chairman of the board of directors of the Medusa Portland Cement Company, died on

Jonathan B. John

July 13 at his home in Cleveland, Ohio. He was 86 years old.

Mr. John had been chairman of the Medusa board since 1951, after having served as the company's president since 1922. He continued to take an active interest in the affairs of his firm until his last illness.

His association with Medusa began when he became a consulting engineer for the company during the building of a plant at Silica, near Toledo, Ohio. At this time he was vice-president and general manager of three cement companies — the Newaygo Portland Cement Company, Newaygo, Mich.; the Manitowoc Portland Cement Company at Manitowoc, Mich,; and the Petoskey Portland Cement Company at Petoskey, Mich.

Often referred to as the "father" of the safety movement in the cement industry, Mr. John was the chairman of the Portland Cement Association's accident prevention committee for 10 years.

Mr. John entered the cement industry as a member of a plant repair crew.

Empire State S.G.-R.M. Assn. Elects Officers, Directors

At the fifth annual convention of the Empire State Sand, Gravel and Ready Mix Association, held in Elmira, N.Y., on June 12 and 13, the following officers were elected for the fiscal year beginning July 1

Edward J. Nunan (Buffalo Slag Company, Buffalo, N.Y.), president; Harold Keahon (Albany Gravel Company, Inc., Albany, N. Y.) secretary; and R. M. Burgess (Mohawk Valley Concrete Company, Inc., Canajoharie, N.Y.), treasurer.

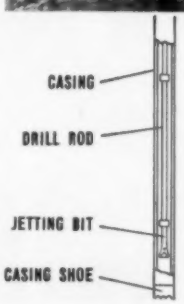
Directors, are as follows:

Sam Catalino, Evans Builders Supply Co., Anjola, N.Y.; Frank D. Cooney Jr., Cooney Bros., Inc., Tarrytown, N.Y.; John C. Cushing Stone Co., Inc., Schenectady, N.Y.; Douglas M. Dalrymple, Dalrymple Gravel and Contracting Co., Elmira, N.Y.; Harold A. Putnam, Putnam-Hawley Building Materials, Inc., Potsdam, N.Y.; Joseph Gentile (associate member), Pittsburgh Testing Laboratory, Buffalo, N.Y.; J.P. McCullough, Central Materials Corp., Canandaigua, N.Y.; J. C. McIntosh, McIntosh Transit Mix Concrete Co., Binghampton, N.Y.; James F. Murphy, Gallagher Bros. Sand and Gravel Corp., New York, N.Y.; Henry H. Kirwin, Eastern Rock Products, Inc., Utica, N.Y.; and George Van Epps, Rumsey-Ithaca Corp., Ithaca, N.Y.

What's down there?

Empire
TEST DRILLS
come up with the
RIGHT ANSWERS

EMPIRE
Hydraulic
Testing
Drill



This test-drilling equipment is a "must" for pit and quarry operators and general contractors.
The EMPIRE Junior Drill used manually with solid rods or the EMPIRE Hydraulic Jetting Drill, using hollow rods, is the standard method of exploring sand and gravel deposits for composition and presence of clay, and accurately determines overburden depth and formation.
Easily transported in any kind of terrain. Assembled and ready for work in minimum time with ordinary labor.

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Expanded Clay-Shale Assn. Holds Successful Meeting At Syracuse, New York

The mid-year meeting of The Expanded Clay and Shale Association drew a new high mark in attendance of lightweight aggregate producers, engineers, equipment suppliers, and architects to Syracuse, N. Y. W. F. Atkins, president of the association, described the two-day gathering as "the most successful we have had to date."

A directors' meeting at the Hotel Syracuse was the first order of business. One of the highlights was a report on a production survey made among producers of lightweight aggregate, which disclosed that members of the Expanded Clay and Shale Association produced close to 1,500,000 cu. yd. of lightweight aggregate in calendar year 1955. The report was presented by R. A. Utiger, Denver, Colo., vice-president of the association.

R. G. Hardy, secretary-treasurer, gave a report on the association's finances, and T. R. Berger, executive secretary, detailed the work of the group since the annual meeting held in New Orleans in January.

Another meeting featured a comprehensive report on percentage depletion, as presented by D. M. Groves, Knoxville, Tenn., chairman of the association's percentage depletion committee. A discussion on research and product data was led by Henry O. Pommer, Memphis, Tenn., chairman of the technical problems committee.

At a dinner meeting attended by 45 members, guests, and ladies, President Atkins introduced Glenn Barnes, of Phoenix, Ariz., immediate past president of the association, and other officers.

George B. Southworth, assistant general sales manager of The Master Builders Company, Cleveland, Ohio, and Harold Anson, of the Winkrete Company, Syracuse, were the speakers at the evening meeting. Mr. Southworth discussed *Technical Treatments for Concrete Masonry*, illustrated with a showing of the film, *Man with the Trowel*. Mr. Anson's topic was *Use of Lightweight Aggregates in Pre-Stressed and Post-Stressed Members*.

A tour of the Onondaga Brick Corporation's plant at Warners, N. Y., was made on Tuesday morning. A bus took the group from Syracuse to the plant, and thence to lunch at the Sherwood Inn, on picturesque Lake Skaneatles. There the men were joined by their ladies, who had toured the Syracuse china plant, Chetanango Falls, and other scenic spots.

The speakers' table at the mid-year meeting of the Expanded Clay and Shale Association. Seated: R. G. Hardy (Onondaga Brick Corp., Warners, N. Y.), secretary-treasurer; Harold Anson (Winkrete Co., Syracuse, N. Y.), speaker; W. F. Atkins (Lehigh Materials Co., Tamaqua, Pa.), president; and R. A. Utiger (Cinder Concrete Products, Inc., Denver, Colo.), vice-president. Standing: Glenn Barnes (Phoenix, Ariz.), past president; T. R. Berger (Allentown, Pa.), executive secretary; George B. Southworth (The Master Builders Co., Cleveland, Ohio), speaker; and Henry O. Pommer (Moss Light Weight Aggregate Corp., Memphis, Tenn.), chairman, technical problems committee.

The Uses of Lightweight Aggregates in Modern Construction was the topic of a paper presented Tuesday afternoon following lunch. Sol Marenberg, consulting engineer of the firm Garfinkel and Marenberg, New York City, showed slides on both the tilt-up and lift slab techniques of construction.

The association's annual meeting will be held at St. Louis on February 24 and 25 prior to the National Concrete Masonry Association convention in that city. Mel Cruzen, Livonia, Mich., a director of the association, is co-ordinating arrangements for these sessions.

Division of H. K. Porter Co. Sponsors Luncheon Meeting

More than 200 leaders of industry, finance, business, and city, county and state government attended a special luncheon-meeting of the 13 divisions of H. K. Porter Company, Inc., at Birmingham, Ala., recently.

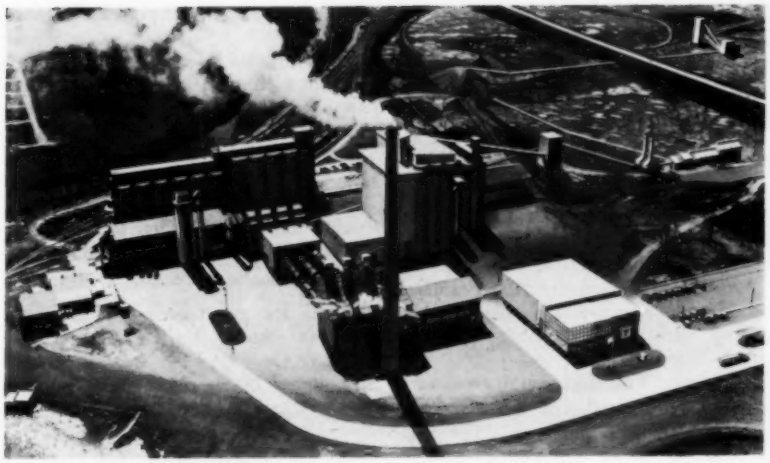
The Connors Steel Division, with headquarters in Birmingham, sponsored the affair. Featured was the first showing in that city of a new color sound-film entitled *The Porter Story*, which outlines the beginning and growth of the Porter organization and highlights manufacturing processes and services rendered by each division.

B. Campbell Blake, vice-president and general manager, and H. T. Montgomery, general sales manager, both of the Connors Steel Division; M. W. White, district manager of sales for the Laclede Christy Division; E. Cecil Martin, sales representative for the Henry J. Disston Division; Emil Hess, president, Birmingham Chamber of Commerce; and Irvin Bieman, business and financial editor of the Birmingham News.

Lafarge Begins Erection Of $13,000,000 Facilities At Vancouver, B.C., Site

Preliminary foundation work has been completed on a $13,000,000 cement plant for Lafarge Cement of North American Ltd. at Vancouver, British Columbia. Major construction is expected to begin immediately, according to a company official.

The plant, which will be erected on a 50-acre site, is scheduled for completion in a year. Initial production capacity is to be 1,260,000 bbl. annually.



• The Humboldt, Kans., plant of Monarch Cement Company, as it will appear at completion of the current $6,500,000 expansion program (see Pit and Quarry, June, p. 24). The new crushing plant and belt conveyor system are seen at upper right. At lower right is the new maintenance and machine shop structure, which also houses the plant offices and employee facilities. Addition of two new raw mills; the third kiln, visible in the center foreground; and a pair of finish mills will aid in raising the plant capacity to 2,250,000 bbl. annually.

B & O's TOFCEE to N. Y. City Added to Freight Service

The Baltimore and Ohio Railroad's newest expansion, "TOFCEE" service to New York City, brings to 14 the number of base areas served by the B & O's own trailer-on-flatcar service.

Through "TOFCEE," fully-loaded highway trailers are placed on railroad flat cars for long hauls. They are off-loaded at railhead and driven the short, over-the-road distance direct to final destination, where cargoes are discharged. Speed, economy, custom service, less wear and tear on trailers and highways, in addition to the easing of traffic congestion, are among the advantages of this type of operation.

The new extension will provide service between New York and the key cities of Youngstown, Akron, Cleveland, Chicago, Toledo, Cincinnati, Indianapolis, Louisville, and East St. Louis-St. Louis.

Dr. John W. McBurney, a nationally known authority in the field of building technology, retired from the staff of the National Bureau of Standards on May 31 after 30 years of service. For the last 20 years he has devoted a large part of his efforts to the fields of masonry, brick, and plaster.

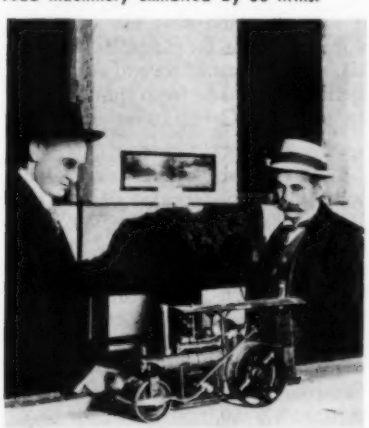
Manufacturers Plan Exhibits For 1957 A.R.B.A. Road Show

Preparations are already being made for the 1957 Road Show of the American Road Builders' Association, which will be held in the International Amphitheatre in Chicago from January 28 to February 2, 1957.

Since the first show, held in 1909 (see below) in Columbus, Ohio, this exhibition has changed radically in many ways — particularly in size. Only 36 exhibitors presented their products in the first show, which was visited by about 1,000 persons. At the last show, held in 1948 along Chicago's lakefront, more than 50,000 visitors saw the exhibits, which were displayed by 282 manufacturers.

Already about 200 manufacturers have contracted for space at the 1957 show, which will have exhibits covering 300,000 sq. ft. of floor space. The A.R.B.A. convention will be held in Chicago concurrently with the road show.

Two visitors at the 1909 road show in Columbus inspecting one of the models of road machinery exhibited by 36 firms.



One section of the 1948 A.R.B.A. road show, described as the largest outdoor exposition of construction machinery ever assembled. During this exposition the latest models of road building equipment and earth-moving machinery were displayed by 282 manufacturers.

Big Increase in Capacity Of New Paulding Plant Approved by Consolidated

Smith W. Storey, president of the Consolidated Cement Corporation, has announced that the firm's directors have authorized facilities for producing an additional 1,250,000 bbl. of cement at the company's Paulding, Ohio, plant, which is now nearing completion.

Mr. Storey stated that the Paulding plant is scheduled to begin operating early in September at the initial rated capacity of 1,250,000 bbl. a year. The additional production just authorized will increase the plant's annual capacity to 2,500,000 bbl.

Consolidated Cement operates a plant at Cement City, Mich., with a capacity of 1,200,000 bbl. annually, and another at Fredonia, Kans., with an annual capacity of 2,300,000 bbl.

The company's total cement-producing capacity by late 1957 is expected to be 6,000,000 bbl. annually.

Plans for construction of a new $250,000 sand and gravel plant near Willow Grove, Pa., was recently announced by the Mahoning Valley Sand Company of West Pittsburgh.

Now Available!

NEWEST

PORTLAND CEMENT

PLANT MAP

We are pleased to announce that our new Portland Cement Plant Map is ready for distribution. The map shows the locations of all the portland cement plants and distributors now operating in the United States, Canada, Mexico, Alaska, Hawaii, and Cuba, plus those that will be completed in 1956. These plants are listed alphabetically, by state and city, so they can be located easily. Production capacity in barrels, types of process, and brand names of each firm's products are also shown.

In order to avoid confusion, distributing plants are listed separately at the bottom of the list. Distributors are also listed alphabetically by state and city.

The map is 34 by 40 inches and is printed in black and white on heavy, durable 60-lb. paper stock. Prices are as follows:

1-10 maps $1.00 each
11-25 maps $ .75 each
more than 25 maps $ .50 each

Previous editions of similar maps were received with such great enthusiasm that our supply was soon exhausted. Therefore, we suggest that you order your maps now, so that you will be sure you will get as many copies as you order.

Please make your request for these maps on your company letterhead. Also, send along a check, cash or money order to cover the number of maps you wish to purchase.

Kinville of Mich. Limestone Retires After 40 Years With U.S. Steel Corp.

John P. Kinville, vice-president, Michigan Limestone Division, United States Steel Corporation, has retired after 40 years of service.

Mr. Kinville joined U. S. Steel in 1916 as an accountant with the

J. P. Kinville

Michigan Limestone and Chemical Company at Rogers City, Mich. In 1922, after serving in World War I, he was appointed treasurer of the company. He was made comptroller in 1940, and in 1951 was appointed treasurer and assistant to the president. Mr. Kinville was promoted to vice-president of Michigan Limestone in 1955.

At the Calumet Harbor terminal in Chicago a British motor vessel, the *Montclair*, docked recently with what is believed to be the first direct shipment of portland cement ever received there from South America. It was indicated that the 1,150-ton shipment from Barranquilla, Colombia, was the first of several such shipments to be made from that port for users in the Great Lakes area.

In its annual report Zonolite Company, Chicago, revealed net sales of $8,538,490 and earnings of $325,818 for the year ended March 31. The figures partially reflect consolidation with Southern Zonolite Company and Carolina Vermiculite Company, two wholly-owned subsidiaries. Sales last year, not including these subsidiaries, were $6,354,510, and earnings were $366,044.

Hart of Johns-Manville Retires to Accept Post On Jr. Achievement Staff

Laurence C. Hart, retired vice-president for relationships of the Johns - Manville Corporation, has been appointed national executive vice-president of Junior Achievement, Inc.

L. C. Hart

In his new position Mr. Hart will head the Junior Achievement organization, which last year reached over 40,000 teen-agers, operating 2,490 Junior Achievement companies in 131 cities throughout the nation.

Cement Carrier Christening Honors Huron's E. M. Ford

On July 24th Huron Portland Cement Company's latest self-unloading cement carrying vessel, the steamer *E. M. Ford*, was christened at Bob-Lo Dock, Detroit. On this day Huron employees, cement manufacturers, and many citizens of Detroit and Michigan paid homage to E. M. Ford, chairman of the board of the Huron Portland Cement Co.

Mr. Ford's daughter, Laura, christened the ship.

Mr. Ford was elected a member of the board of directors of the Huron Portland Cement Company in 1929. Four years later the board of trustees elected him treasurer and assistant secretary. In 1936 he was named vice-president and continued as Huron's treasurer. He served as president and treasurer of the Huron Portland Cement Company from 1941 to 1953. Since January 27, 1953, he has been Huron's chairman of the board. Paul H. Townsend succeeded him as president and treasurer.

Besides being the chairman of the board of Huron, Mr. Ford is chairman of the board of the Portland Cement Association and chairman of the board of Wyandotte Chemicals Corporation.

The *E. M. Ford* was formerly the *Presque Isle*. The vessel was purchased from the Cleveland Cliffs Steamship Company in 1955 and was reconstructed from a bulk ore carrier to a self-unloading cement carrier at Sturgeon Bay.

The vessel's cargo hold was fitted with hopper bottoms. A new transverse screen bulkhead, a new forward cargo hold bulkhead, a new after cargo hold bulkhead, a centerline bulkhead through the length of the cargo space, and a centerline longitudinal tunnel were added. The existing cargo hatch openings were replated. Two unloading machinery spaces were provided, one at each end of the existing cargo hold. New sleeping quarters for six persons were built aft.

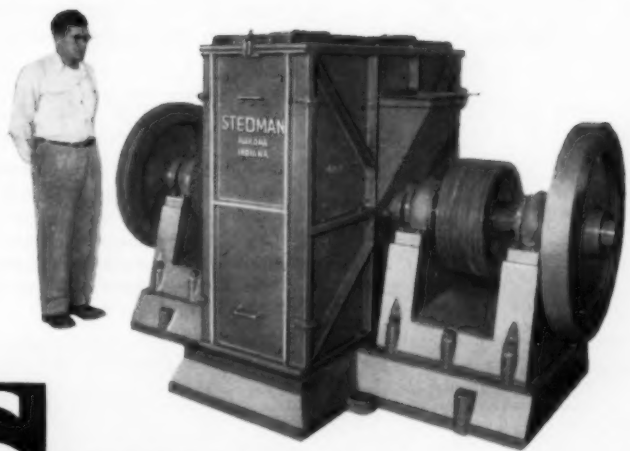
ARE YOUR STONE AND GRAVEL PRODUCTS CUBICAL IN SHAPE?

ARE THEY FREE OF SOFT STONE AND CLAY?

WILL THEY MEET SPECIFICATIONS AND PASS ABRASION TESTS?

DO YOU NEED MORE OF THE FINER SIZES IN YOUR SAND PRODUCTS?

CAN YOU MEET TODAY'S SPECIFICATIONS ON AG LIME?



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William A. Wilson

President. Started as sales representative for Pit and Quarry in 1922. Eastern Manager in 1939, Vice-President and Director in 1951. Executive Vice-President in 1951, and President in 1954.

Ray L. Smith, Jr.

Senior Vice-President. Joined Pit and Quarry early in 1943. Elected Vice-President same year. Elected a Director in 1948 and became Senior Vice-President in 1955.

Wm. T. Klussman

Secretary-Treasurer. 33 years with Pit and Quarry. Production Manager in 1932, elected Secretary and Director in 1933, Secretary and Treasurer in 1951.

Walter E. Trauffer

Editor. On editorial staff 29 years. Graduate Civil Engineer. Has personally visited most of the plants in the industry, as well as many operations in Canada and Mexico. Member AIME and Chicago Engineers Club.

STABILITY...

PIT AND QUARRY's experienced team has worked together to achieve a 40-year publishing record of industry service. This, in itself, reflects an inherent sense of stability. PIT AND QUARRY therefore enjoys an unparalleled position as a vital part of the tremendous nonmetallic minerals industry.

ABILITY...

PIT AND QUARRY employs the best men available . . . men thoroughly equipped to efficiently serve the nonmetallic minerals industry. Even the staff members most recently added to PIT AND QUARRY can proudly point to the scope of their industry experience. And this collective wealth of industry background has paid off handsomely . . . earning for PIT AND QUARRY the highly regarded reputation as the industry's basic publication.

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Designed to fill any staff vacany from within the organization — wherever and whenever the occassion should arise — PIT AND QUARRY's "management understudy program" has provided the flexibility necessary in a successful publishing organization. And, because PIT AND QUARRY publications are employee-owned, responsible positions are quickly and capably filled. With a program of this nature, PIT AND QUARRY is determined to maintain and continue an even greater record of industry service.

Chas H. Bussmann

Vice-President and Central Sales Manager. Joined the New York office of Pit and Quarry in 1944. Appointed Central Advertising Manager of Cleveland office in 1947. Central Sales Manager in 1954. Vice-President in 1955. Member NIAA, Cleveland Ad Club.

Frank J. Cornyn

Director, Vice-President and Midwest Sales Manager with Pit and Quarry 10 years. Served as Staff Sgt. in Corp of Engineers during World War II. Member Sales Executives Club. Past Director Chicago Chapter NIAA.

John R. Duble

Vice-President and Eastern Sales Manager, with Pit and Quarry 9 years. Also worked in industrial sales to the nonmetallic minerals industry. Member several NIAA chapters. Associate Director IAA-NY.

George P. Grant

General Sales Manager. Over 25 years in publishing as Regional Sales Manager and Business Manager for leading industrial publications. Joined Pit and Quarry in 1946, Midwest Sales Manager in 1949, General Sales Manager in 1954.

J. G. Johnson

Central Advertising Manager. Attended Western Reserve University. Began Advertising Sales in 1950. Joined Pit and Quarry's Cleveland office on 1953. Appointed Central Advertising Manager in 1956. Member Cleveland chapter NIAA.

Roy M. McDonald

Founder of the McDonald-Thompson Company, Pit and Quarry's advertising representatives in Los Angeles, San Francisco, Seattle, Denver, Houston, Dallas and Tulsa.

Roy L. Peck

Managing Editor. Graduate Civil Engineer. Four years with Portland Cement Association. Joined Pit and Quarry in 1953. Has wide acquaintance and knowledge of the industry acquired by personal contact. Member engineering associations.

Harry F. Utley

West Coast Editor. On editorial staff 26 years. Previously with Portland Cement Association. Located in California, travels extensively, thoroughly covering industry operations in eleven western states.

Buren C. Hered

Field Editor. Geologist, field experience in mining operations and explorations. Also with mining and geologic consulting firm, and with U.S. government as mining geologist in nonmetallic minerals industry.

Marie E. Ansel

Assistant Editor for 11 years. Experienced in editorial and production in several publishing fields. Member Illinois Woman's Press Association and National Federation of Press Women.

James G. Kostka

Director of Marketing and Research. Has 13 years of marketing and research experience, the last 3 years in the nonmetallic minerals industry. Received AB degree at University of Illinois.

Louis McLouth

Editorial Supervisor Pit and Quarry Handbook. Experienced as reporter, editor, business manager of newspapers; advertising representative of trade magazines; advertising manager of manufacturer of material-handling machinery.

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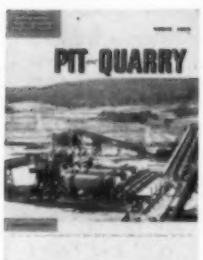

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Richard J. Murphy

Eastern Advertising Representative. In advertising and publishing business for 25 years. Largely in light and heavy construction markets. Member NIAA — New York chapter and New Jersey chapter.

Raymond S. Neuwelt

Midwest Advertising Representative. 10 years in advertising and sales promotion in building and construction field. University graduate — degree in Chemistry Northwestern University.

Fred W. Smith

Southeastern Advertising Representative with headquarters in Birmingham, Alabama. Many years experience in editorial and advertising with business magazines. Also engaged as an engineer with engineering firms.

Robert L. Rudd

Circulation Manager. 6 years with Pit and Quarry. Member Chicago Circulation Round Table, DMAA, Mail Advertising Club of Chicago.

Harold L. Davis

Production Manager. 10 years printing and production experience with magazines. Student of layout and production technique at Northwestern University. Secretary Business Paper Production Club, Chicago.

Dean Miller

Directory Compiler. 5 years with Pit and Quarry. Previous industry experience with construction company and producer of crushed stone.

Edna Bay Pure Stone Co. Leases Alaskan Deposits—Will Build $5,000,000 Plant

Officials of Edna Bay Pure Stone Company, a Texas corporation, have announced the completion of negotiations with the Aluminum Company of America for a long-term lease of Alcoa's Edna Bay, Alaska, limestone claims.

A total of 27 claims, patented by Alcoa 10 years ago, are involved in the lease arrangement. They will constitute the principal raw material source of a $5,000,000 lime plant to be installed by Edna Bay Pure Stone Company in the Vancouver, Wash., area. The new firm is owned jointly by Kent B. Diehl Sr., industrialist of Orange, Tex., and Cullen F. McDougal, Dallas investor.

The Edna Bay limestone deposits are located north of the International Boundary on the southern tip of Kosciusko Island. Edna Bay Pure Stone management plans to quarry the chemical grade, high-calcium stone, and transport it in self-unloading Victory ships to the Vancouver processing plant. Lime produced from the stone will be used by the cement, paper, sugar beet, and carbide industries on the West Coast.

Construction of the new plant, engineered for a capacity of 300 t.p.d., will begin early in 1957. It will be located on the Columbia River, and will include a dock area for the self-unloading Victory ships. The new facility will employ about 150 persons.

Mr. Diehl, developer of the Edna Bay project, also is president of the Texas Portland Cement Co., chief engineer and general manager of the Mississippi Valley Portland Cement Co., and general manager of the Verde Valley Industries of Arizona.

Caterpillar Holds Preview For New Decatur Plant

AT THE recent press preview of Caterpillar Tractor Company's new multimillion-dollar plant at Decatur, Ill., an optimistic note concerning the business outlook was struck by top members of the company's management. Led by Harmon S. Eberhard, president, several Caterpillar executives described an encouraging future for the heavy machinery business, both domestic and foreign. Mr. Eberhard noted that this outlook has contributed to the continuance of Caterpillar's $200,000,000 expansion plans.

Nearly 100 members of the trade press were guests of the company on May 17, for an invitational tour of the new operation which preceded an open house held from May 21 to 25. The recent completion of the plant, which was erected to accommodate the concern's growing production of wheel-type tractors and motor graders, allowed the release of facilities in Peoria, Ill., for added output of crawler tractors and diesel engines at that location.

Situated on a 425-acre site, the manufacturing building contains 730,400 sq. ft. of floor area. The two 800-ft. assembly lines were designed to handle future addition of other models, as well as those in current production. The three motor grader models—No. 12, No. 112, and No. 212—are assembled on one of the lines, while the other is utilized for DW15, DW20, and DW21 wheel-type tractor assembly.

In addition to the Caterpillar scrapers available for the wheel-type tractors, rear- and side-dump wagons built by the Athey Products Corporation of Chicago can be used as trailer units. They are designed to handle blasted rock, ore, and other heavy abrasive materials.

The selection of Decatur as a location for Caterpillar's new plant was influenced, it was said, by a number of factors. Considerations included the railroad and truck transportation available, which expedites both receipt of raw materials and shipment of finished products; and the proximity of Peoria and Joliet, where other large company operations are located.

In addition to Mr. Eberhard, the following Caterpillar officials attended the press preview: C. A. Woodley, vice-president; W. S. Ziegler, domestic sales manager; L. L. Morgan, sales development manager; and Warren Kinsey, Decatur plant manager.

Above: A wheel-type tractor manufactured at Decatur, equipped here with a scraper as a trailing unit.

Below: Caterpillar's recently completed Decatur plant has an administration building which contains 53,581 sq. ft. of office space in addition to the 730,400 sq. ft. of production area.

Blast-Furnace Slag Output In 1955 Tops 32,000,000 Tons

An uninterrupted and slightly accelerated steel production, in conjunction with increased demands for slag as a mineral aggregate, resulted in a new record tonnage processed by the iron blast-furnace slag industry. The production in 1955 was 32,438,017 short tons, valued at $46,307,898, compared to the 1954 output of 29,235,142 short tons, valued at $39,476,408. These statistics were compiled from a canvass conducted by the National Slag Association in co-operation with the U. S. Bureau of Mines. Included were the production figures of 45 companies operating 68 plants.

Screened air-cooled slag, the major product, increased 11 percent to 24,900,883 short tons, valued at $36,131,615. Of this total, 22,436,056 short tons, or 90 percent, was used as railroad ballast, aggregate in portland cement concrete construction, bituminous construction of all types, and miscellaneous highway and airport construction. Other principal uses for this type were in manufacturing concrete block, mineral wool, and roofing aggregates.

Unscreened air-cooled slag output totaled 809,461 short tons, valued at $596,540—increases of less than 1 and 11 percent, respectively, over the 1954 figures. About 91 percent of this material was used as aggregate for highways and airports.

The production of **granulated slag** in 1955 totaled a record 3,835,829 short tons—an increase of 11 percent over the 1954 figure. (The 1954 figure also showed an increase over 1953 production by 3 percent.) Of the 1955 quantity, 44 percent was used as a raw material in the manufacture of hydraulic cement, 42 percent for highway construction, and the remainder for concrete block manufacture, agricultural slag, liming, and miscellaneous uses.

Expanded slag production in 1955 reached still another record—2,891,844 short tons, valued at $7,961,466—increases of 11 and 28 percent, respectively, compared to the 1954 figures. The bulk of the material was used in the manufacture of lightweight concrete block and as an aggregate in lightweight concrete.

Iron blast-furnace slag was produced in 15 states, but the major quantity is processed in the steel centers of Ohio, Pennsylvania, and Alabama, and the remainder in California, Colorado, Illinois, Indiana, Kentucky, Maryland, Michigan, Minnesota, New York, Tennessee, Texas, and West Virginia.

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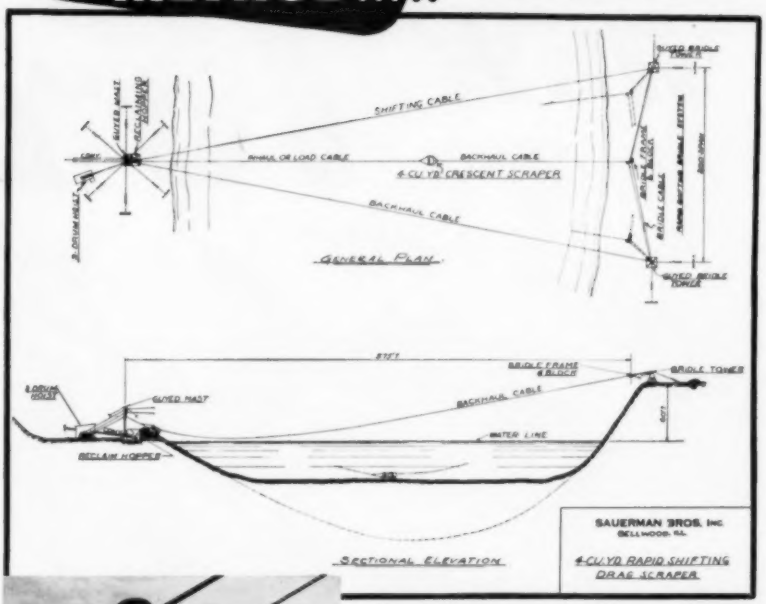
Scraper Machines Engineered to Your Operation



Above drawing was prepared for a specific drag scraper installation and does not represent maximum spans.

View shows rapid shifting bridle frame and all operating cables. Crescent may be seen in background conveying load to reclaiming hopper just in front of mast.

•

Contact Sauerman's engineering department for specific recommendations and information. No obligation.

Ask for Catalog A, Drag Scrapers—24 pages of job photos and specifications. Request Field Reports showing your material being handled by the low cost Sauerman Method.

The Sauerman Method works equally well over widely differing areas and span limits . . . on hills, swampy ground or underwater . . . handles any material a dragline can dig.

Every scraper machine is powered by a Sauerman Roller Bearing Hoist, especially designed to withstand sudden shocks and changes in speed.

When a rapid shifter is used, a third hoist drum is added to shift the bridle frame. The rapid-shifting bridle system (upper right of drawing) permits frequent shifting of the scraper's line of operation in non-caving material, shallow excavations or overburden.

Operating costs are lower—basically, it is cheaper to drag material than it is to lift and transport it. You eliminate the power costs of moving heavy machinery about the area. You pay only for pay loads—not dead weight. When expendable parts—sheaves, clutch or brake linings—are replaced, the machine is restored to practically new condition.

Sauerman can help you select the method of materials handling most profitable for your job—a system that will give you the lowest cost per cu. yd. handled.

SAUERMAN BROS. INC.

634 S. 28th AVE. BELLWOOD, ILL.

Crescent Scrapers • Slackline and Tautline Cableways • Durolite Blocks

ALLIS-CHALMERS

new TS-260

power-matched for production

power-matched to capacity With more than 18 horsepower for every yard of struck capacity, the new TS-260 has plenty of power to move full loads at full speed—under all conditions.

power-matched to strength The TS-260 has the structural strength and balance to effectively utilize all of its horsepower . . . with extra capacity built into the clutch, transmission, final drives and drive axles . . . with a heavy, all-steel, box-type tractor frame . . . and with proper over-all weight distribution.

Motor Scraper

200 hp
11 yd (struck)
14 yd (heaped)

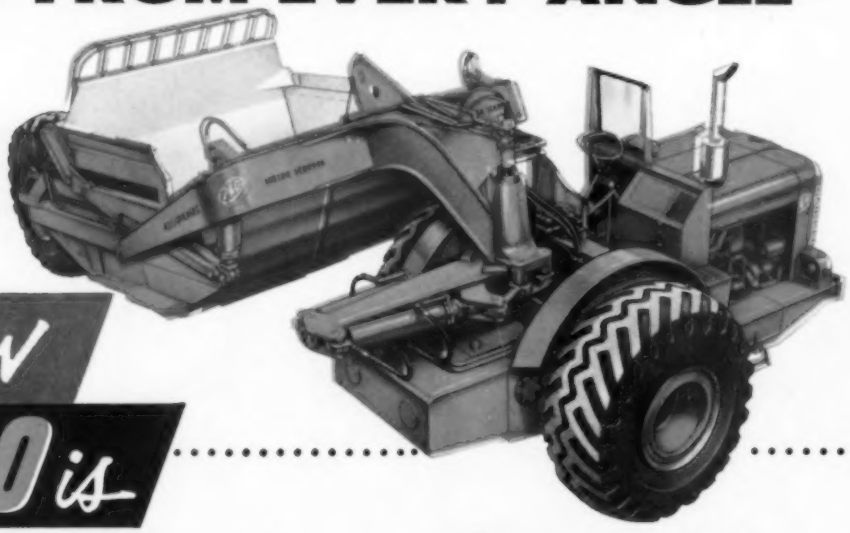
and profit on the job!

power-matched **for speed** The big Allis-Chalmers diesel engine provides high torque at both high and low engine speeds resulting in smooth shifting and fast acceleration. And with plenty of engine power, the TS-260 loads fast, hauls fast, dumps fast . . . moves big payloads at low cost, even under tough conditions.

power-matched **for operating ease** Overlapping gear speeds in all four gear ratios reduce gear shifting, speed work cycles. And with 90-degree steering for rapid maneuvering in close quarters, it's easy for the operator to get the most out of the TS-260.

The new TS-260 gives you these four basic advantages . . . and many important new features

CHECK IT FROM EVERY ANGLE—



the New TS-260 *is* Designed for Low-Cost Dirt

"Live action" hydraulics for sure control. Positive gear-driven pump provides constant live power for both steering and scraper operation. Full-flow filtering, cross relief valves and simple design make this an efficient, safe performer.

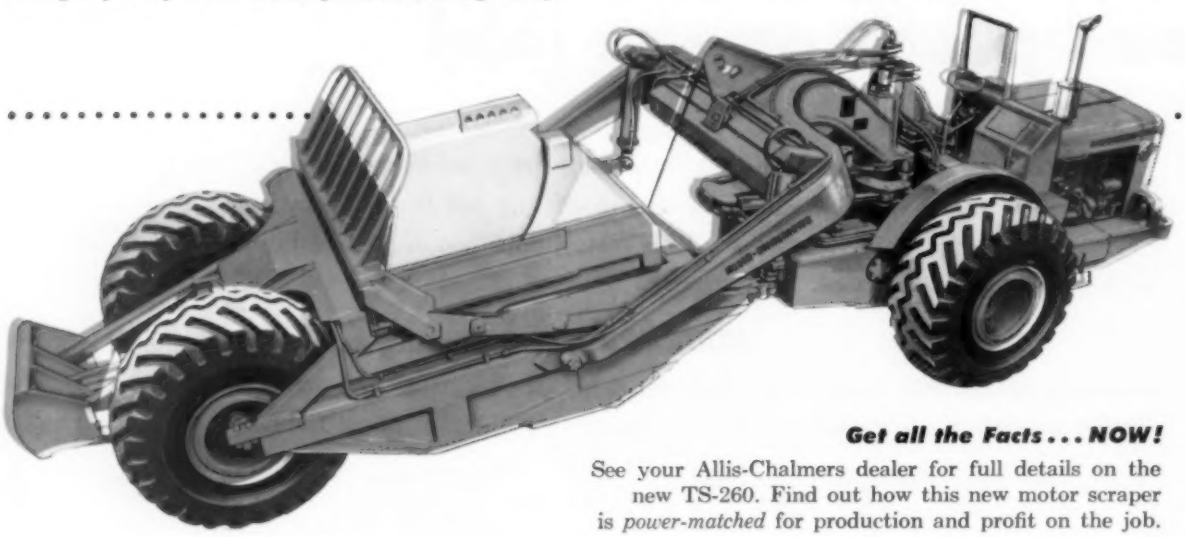
Positive 90-degree steering for close-quarter maneuverability. The steering wheel is direct-link connected to the steering valve. A 30-degree turn of steering wheel directs full pump flow to two double-acting steering jacks for fast, positive turns up to 90 degrees. For slower turning at high speeds, a slight turn of steering wheel provides a smooth, regulated response.

Double-safety brakes for positive stops. Big, four-wheel air brakes provide sure braking under full load at full speed . . . and an air reservoir system with emergency relay valve means positive braking safety.

"Boiling-action" loading for big payloads. Combination of curved bowl bottom and offset cutting edge provides a "boiling" action that eliminates voids . . . builds profitable, heaped loads.

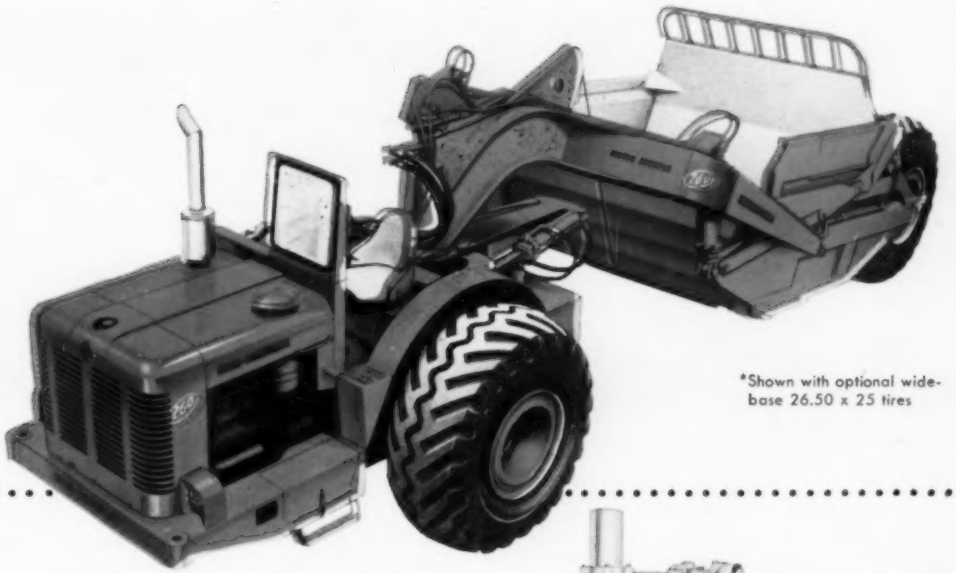
Quick, clean spreading with high apron and forced ejection. Patented linkage moves apron ahead and up when ejector goes forward . . . providing high apron lift and exceptionally large opening for clean, easy-to-control unloading.

Balanced weight distribution for maximum traction, long tire life. When empty, 66 percent of entire TS-260 weight is on front wheels—34 percent on rear wheels. When loaded, each wheel supports equal weight—providing excellent flotation and fast hauling.



Get all the Facts . . . NOW!

See your Allis-Chalmers dealer for full details on the new TS-260. Find out how this new motor scraper is *power-matched* for production and profit on the job.

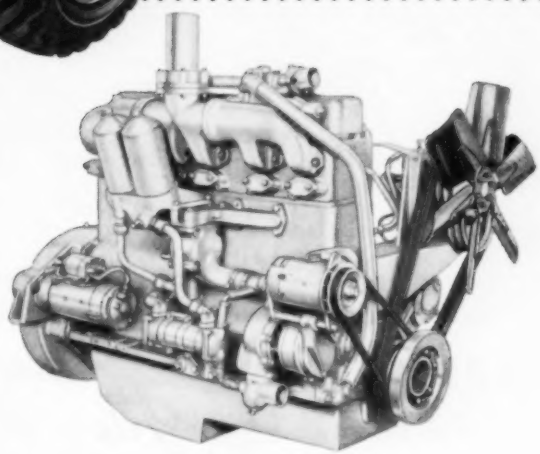


*Shown with optional wide-base 26.50 x 25 tires

Choice of tires to fit job conditions*. Standard 21.00 x 25 (20-ply) or optional wide base 26.50 x 25 (20-ply) tires provide a choice that insures carrying capacity and full flotation for steady going in all types of material.

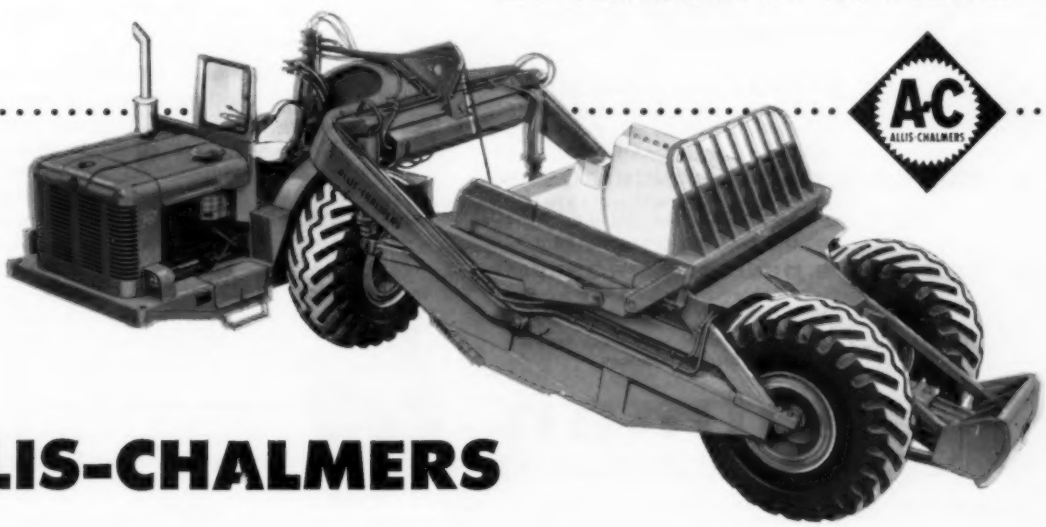
Big 200-horsepower Allis-Chalmers diesel engine. The 844-cubic-inch piston displacement and conservative 200-horsepower rating of this outstanding diesel engine provides plenty of reserve for low-cost operation under all conditions. "Follow-through" combustion results in sustained power, low peak pressures . . . smooth, steady performance.

New easy-shifting transmission. There's a correct gear ratio in the TS-260 transmission for every speed, every work condition. New clutch brake and gear overlap in all four speeds makes it easy to shift gears smoothly, maintain steady acceleration and full pulling power.



Heavy-duty power train. The TS-260 power train is designed to transmit high engine torque to the drive wheels with maximum efficiency. The engine, clutch and constant-mesh transmission are assembled as a unit to assure accurate alignment. Simplified removal of each individual component provides easy serviceability.

ALLIS-CHALMERS, CONSTRUCTION MACHINERY DIVISION, MILWAUKEE 1, WISCONSIN



ALLIS-CHALMERS

A sky-side view of National Gypsum's newly completed plant on the Delaware River, near Burlington, N. J.

Natl. Gypsum's New Plant At Burlington, N. J., Completed

National Gypsum Company officials have announced the firm's new multimillion-dollar Burlington, N. J., plant has been completed. Production is expected to begin soon. The quarter-mile-long plant is expected to produce enough gypsum building products for 50,000 homes a year.

The *M/V Melvin H. Baker,* a new 16,500-ton gypsum ore carrier named for the founder and present board chairman of National Gypsum, is scheduled to arrive at the new plant on August 11 on its maiden voyage. In the ship's hold will be a cargo of gypsum rock from the company's large Nova Scotia mining development. It will be the first load of the rock brought directly to the plant.

A. G. WATT, who is retiring as service manager, will continue with Lehigh in an advisory capacity to the general sales department.

AT NO EXTRA COST!

Only Grip-Master® SPROCKETS HAVE HARDENED TEETH to 7" in diameter ★

Series II

Series I

★ YOU CUT OPERATING COSTS!
Because hardened teeth means better resistance to shock loads and abrasion, you get longer chain drive life "on-the-shaft."

★ YOU SAVE MAINTENANCE COSTS!
Sprocket replacement costs are reduced about 30%. Hubs or bushings can be used over and over, with installation and removal fast, clean and simple.

★ YOU SOLVE DELIVERY PROBLEMS!
Grip-Master Sprockets are available "off the shelf" for quick delivery. Cuts space and storage costs for you.

For complete details, *write today* for your Grip-Master Sprocket brochure.

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POWER TRANSMISSION
ROLLER CHAINS AND SPROCKETS

33486

CULLMAN WHEEL CO. • 1342 Altgold Street • Chicago 14, Illinois

West End-Stauffer Merger Approved by Directors

Officials of the West End Chemical Company and the Stauffer Chemical Company have announced that their boards of directors approved a merger plan.

The plan provides for an exchange of one share of Stauffer common stock for 5.6 shares of West End common stock and one share of Stauffer common stock for 60 shares of West End preferred stock, excluding the shares of both classes of West End which are owned by Stauffer.

West End Chemical Company produces lime, borax, soda ash, and salt cake at its plant at Searles Lake, Calif. For more than 25 years the Stauffer Chemical Company has been the exclusive sales agent for West End's borax. West End will continue to operate as an autonomous division of Stauffer under the designation of West End Chemical Company Division of Stauffer Chemical Company.

Lake Ontario Portland Cement Starts Quarry Production

The $16,500,000 cement plant project of the Lake Ontario Portland Cement Company at Picton, Ontario, Canada, was put under way with the firing of the first blast in its 165-acre limestone reserves.

This plant is expected to be in production next year, and it is planned to market the product in the Toronto, Rochester, and Picton areas. A 100,000-bbl. warehouse is planned for Toronto and another for Rochester.

Plant capacity will be 1,700,000 bbl. per year, as well as 650,000 tons of rock aggregate.

A. G. FALLAT, formerly assistant service manager for the Lehigh Portland Cement Company, Allentown, Pa., was recently appointed service manager.

with Gulf Lubricants and Fuels

on the job at Macon Quarries, Macon, Georgia

Helping quarry operators keep equipment working smoothly and efficiently is an important part of Gulf's business—made possible by a complete line of high quality lubricants and fuels, plus practical petroleum engineering service.

Gulf lubricants provide an extra margin of protection—prevent excessive wear and keep maintenance costs down. Gulf fuels burn evenly and completely—leave fewer harmful engine deposits and contribute to top engine performance.

And Gulf Sales Engineers are always available to assist you on any problem involving a petroleum product. Try this crack combination of quality products, helpful engineering counsel, and prompt delivery service in your operation.

Consult the telephone directory for the number of your local Gulf office, or write on your company letterhead to the address below.

Gulf Oil Corporation · Gulf Refining Company

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THE FINEST PETROLEUM PRODUCTS FOR ALL YOUR NEEDS

Calaveras Adds Fifth Kiln At San Andreas Operation

A giant fifth kiln which will add 1,000,000 bbl. of cement to the annual production of the Calaveras Cement Company plant at San Andreas, Calif., was placed in operation on June 13. The kiln and its related equipment will boost production capacity of the Calaveras plant to more than 4,500,000 bbl. of cement per year, making it one of the largest cement plants in the United States.

The new kiln will be closely watched by engineering experts, who regard it as a forerunner of automation in the cement industry. It introduces specially designed instruments which eliminate almost all of the human checks on operation which would normally be required.

Clinker from the kiln, stockpiled until July 15, will be ground into cement in new finish mills.

The kiln began producing exactly 355 days after the order was placed. Normal construction time for a kiln of its size ranges from 14 to 18 months. Calaveras saved time by having the kiln shell fabricated in the San Francisco yards of Bethlehem Pacific (instead of in the East), and by assembling it with the help of three shifts working around the clock.

William Wallace Mein Jr., Calaveras president, stated that the project was rushed to help insure a steady supply of cement in northern and central California during the summer months, when construction activity is high.

The kiln is 360 ft. long, has a diameter of 11 ft. 3 in., and weighs 500 tons. All of its operation is automatic. It even calls for an attendant if it needs help. Optimum performance is assured for the first time by a complex of instruments. These devices analyze the exit gases and hold variations in operation down to less than 0.5 percent. In addition to saving fuel, this innovation in kiln control will produce clinker of greater uniformity than has been attainable in the past.

Automatic controls of the kiln were developed by Lewis A. Parsons, Calaveras consulting engineer, Mel Sutton, plant chemist, and Nels Swanson of Swanson Engineering and Manufacturing Company, Inglewood, Calif.

This fifth Calaveras kiln is the major item in a $4,000,000 plant expansion program which is increasing the company's production capacity by 30 percent. Additional items to be installed include cement storage silos, slurry tanks, a crusher, coolers, an electric precipitator, a Multiclone, raw and finish mills, and materials handling equipment. The company also plans to build new shops, offices, and a warehouse. Most of the related equipment already is in service at the plant. The new electric precipitator, which also began operation on June 13, keeps the flue dust of the kiln from escaping through the plant stack.

Left: This 42-ton precast reinforced concrete girder is one of the tilt-up members in the recently completed San Andreas buildings. The slabs used in the structures weighed 18 tons.

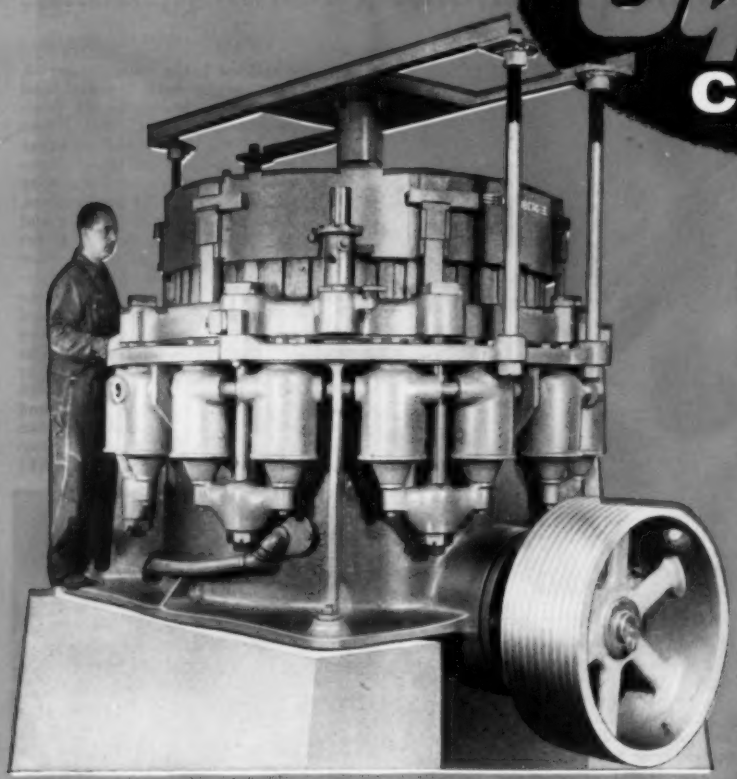
Below: This 360-ft. kiln of Calaveras Cement Company at San Andreas, Calif., is 11 ft. 3 in. in diameter and weighs 500 tons. Inside the end closest to the camera the temperature is 2,800 deg. F. Operation of the kiln is by pushbutton.

The new kiln will add 1,000,000 bbl. of cement to the annual production capacity of the Calaveras Cement Company plant at San Andreas. Plant manager Grant Metzger (right) is shown pushing the button that started the kiln. Chief chemist Mel Sutton looks on.

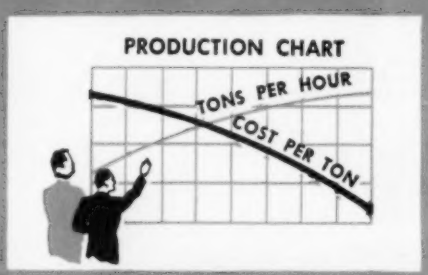
NOW . . . produce your required FINES more economically . . .

with the Gyradisc* CRUSHER

*A "Finer" Reduction Crusher by the Builders of Symons Cone Crushers



. . . another outstanding **NORDBERG** contribution in the field of **FINE REDUCTION CRUSHING**



● Built to supplement the world renowned Symons® Cone Crusher, the GYRADISC provides a medium for still finer reduction than that previously obtainable *economically* in conventional reduction machines.

Large capacity and high efficiency, resulting in lower power per ton of finished product, point up the advantages of the GYRADISC for profitable production of fine specification material as well as for preparation of finer feeds for rod, tube, ball mill, or other types of grinding operations. Tests in actual installation have effectively demonstrated that the GYRADISC produces 60 to 70 tons of minus 8 mesh product per hour with corresponding quantities of finer sizes depending upon material, feed size and moisture content.

The GYRADISC, employing a unique combination of practical design features and original principles of operation, was developed with the background of Nordberg's long experience with the universally accepted Symons Standard and Short Head Cone Crushers. It is presently built only in the 54″ size.

For full information, write for your copy of Bulletin 228. *Nordberg Mfg. Co., Milwaukee, Wisconsin.*

SYMONS . . . A REGISTERED NORDBERG TRADEMARK KNOWN THROUGHOUT THE WORLD

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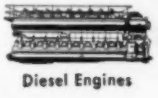
Symons Gyratory and Cone Crushers

Mine Hoists

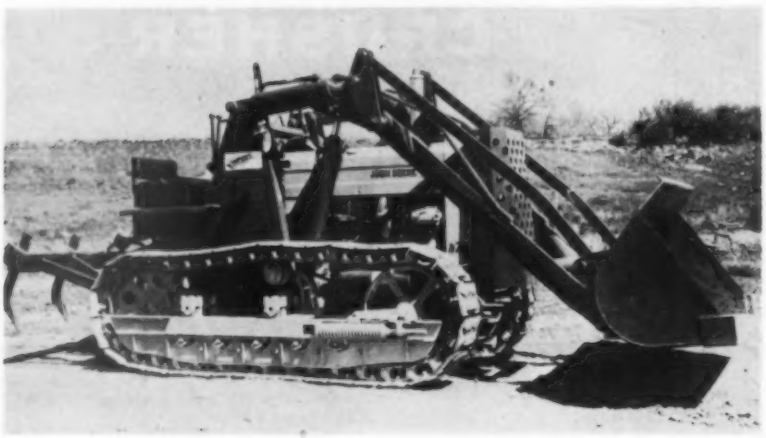
Symons Vibrating Grizzlies and Screens



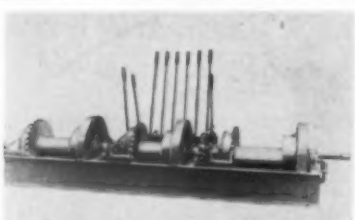
Diesel Engines

New Machinery
and Equipment

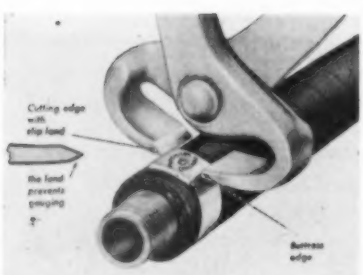
For Further Information Use Card on Pages 99-100



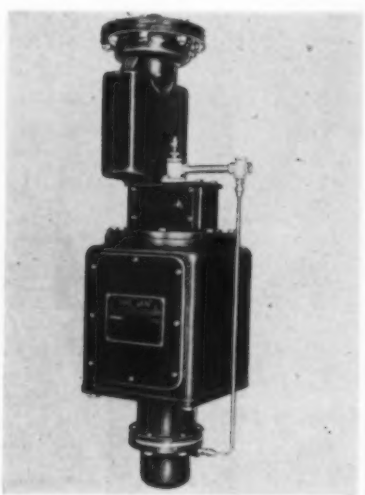
• The Henry Manufacturing Company has designed the TS-40F industrial tractor shovel for use on John Deere 420 and 40 crawler tractors. Features of the TS-40F include a self-leveling bucket, solid steel lift arms, full flow oil filter, double-acting lift cylinders, and larger parallel circuit valves. The large steel mainframe serves as oil reservoir. Lifting capacity is 3,000 lbs. ▲ **(51)**



• A compact, packaged-unit dredge hoist has been developed by King Manufacturing Company. The unit requires only 10 hp. to deliver a 5,000-lb. capacity at 35 f.p.m. Cable drums are 16 in. long and 7 in. in diameter. Each drum is equipped with a clutch lever and brake lever. The center drum is for hoisting the suction line boom or dredging ladder; the outside drums are for moving dredge to either side or forward. ◀ **(52)**

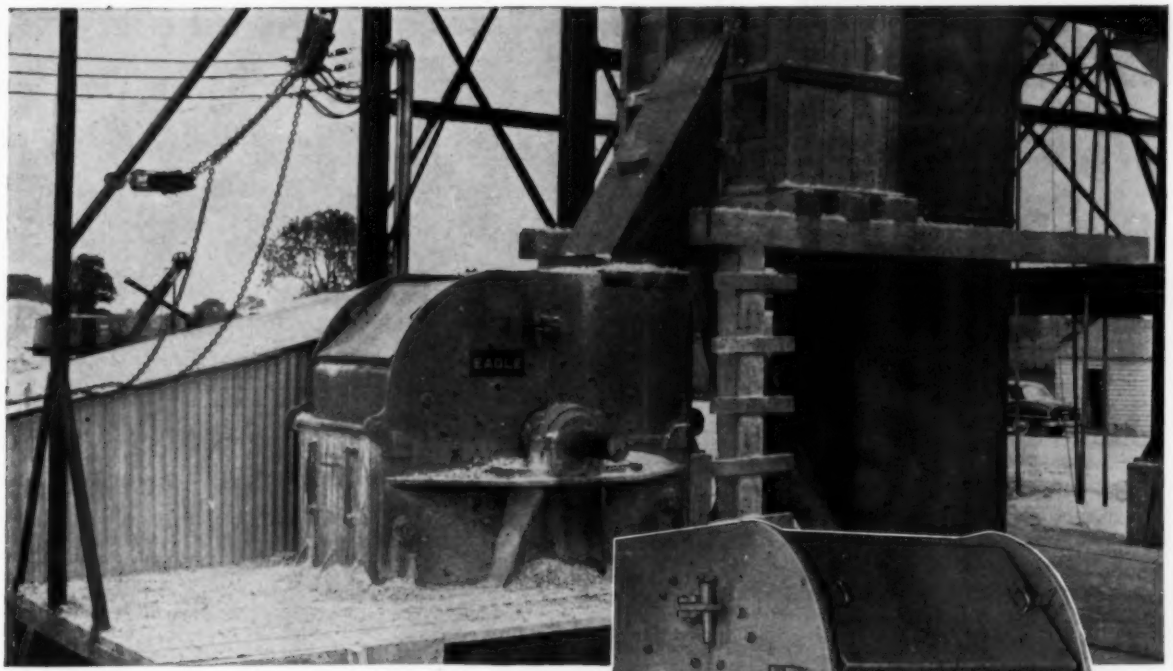


• Model D-550, a new clamp cutter specially designed for removing Punch-Lok hose clamps, has been introduced by the Punch-Lok Company. The 14 in. long cutter is of drop forged hi-carbon steel, and features a single cutting jaw with slip land to prevent gouging of the hose. The other jaw functions as a buttress edge. Its rugged construction withstands strain. ▲ **(53)**

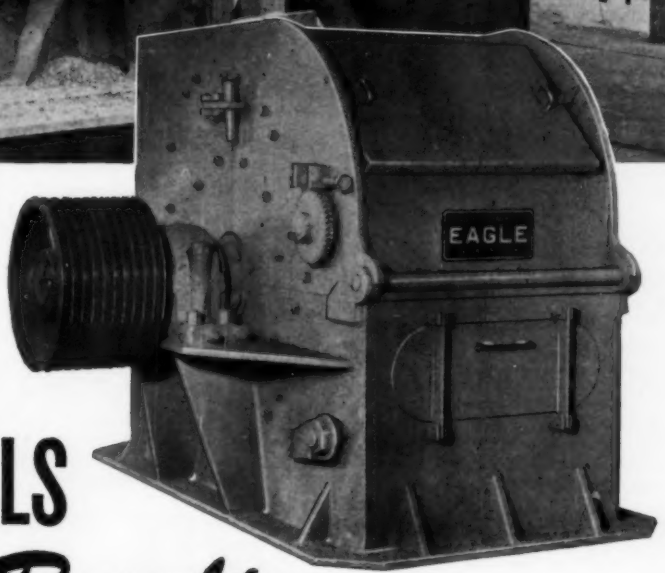


• Flexible molded brake lining material, designed for use on both internal and external drums by the Raybestos Division, Raybestos-Manhattan, Inc., eliminates the need for two types of brake lining. Suitable for use on power shovels, cranes, hoists, winches, and a variety of other non-vehicular brake applications, the lining is available in 25-ft. rolls and in 12½- by 12-in. sheets in thicknesses of ½, 5/16, ⅜ and ½ in. Brass alloy chips incorporated in the brake material increase brake efficiency and brake life. The illustration shows Flex-Molded brake lining being installed on a heavy duty brake band for a mine hoist. The lining is cut to size from either rolls or sheets, held in position on the band with C-clamps, drilled and counter sunk, and then riveted in place. The entire job can be done by one man using regular shop tools. ▼ **(55)**

• An electro-pneumatic controller, used for simultaneous measurement and control of current to a.c. motors or other a.c. circuits, is available from the Hagan Corporation. This device can be used to measure single phase alternating current in a power line or in one leg of a three-phase motor; it can limit current to a predetermined maximum; and it can be used to maintain current at a "set point" value in a control system. Successful applications of the alternating current controller include motor driven compressors, blowers, pulverizers, and other installations in which motor drives range from 5 to 10,000 motor hp. ◀ **(54)**



Amazing results have been obtained on this Eagle 36-42 installed in Wyandot-Dolomite Corporation's quarry, Carey, Ohio.



EAGLE HAMMERMILLS

Pay off in Results...

This newest hammermill-pulverizer is designed to do that larger, heavier job. Makes quick work of limestone or any stone up to 3", at the rate of 100 to 250 tons per hour.

The consistently high quality and cubical shape of EAGLE processed limestone is the talk of the "quarry-town". In many cases it eliminates the need for a primary crusher.

SKF spherical, roller type, self-aligning bearings are typical of the quality throughout. Adjustments easily made on grate bars and breaker plates while machine is in operation.

Send for complete specifications, Folder 1150.

EAGLE

JAW CRUSHERS · IMPACT BREAKERS
PULVERIZERS · CONVEYORS · LOADERS

CRUSHER CO., Inc. GALION OHIO·U·S·A

DURACLONE ....Extractor of Lost Fines

● Another satisfied DURACLONE user is McBride B. Wilson, manager of the Hays Gravel Company, Inc., of San Marcos, Texas.

● Mounted astride the plant's sand belt, the 20-in. DURACLONE continuously puts back an average of 3 tons of clean fines hourly, blending it into the finished sand output.

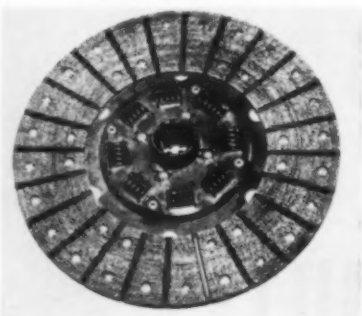
● This medium-sized operation, with a sand-producing capacity of about 30 t.p.hr., was losing its valuable fine specification sand in the waste overflow from its sand washers — until the DURACLONE came to the rescue! Its experience parallels that of a score of other sand-and-gravel plants which have installed DURACLONES within the past year. If you are losing desirable fines in your washing operations, it will pay you to learn what an inexpensive DURACLONE can accomplish for you.

● DURACLONES are completely rubber-lined for long life and are fitted with special spirals to gain velocity and speed the cyclonic separating action for maximum underflow recovery. Sold with an unqualified guarantee of performance when installed as directed. Available in sizes to handle up to 800 g.p.m. input.

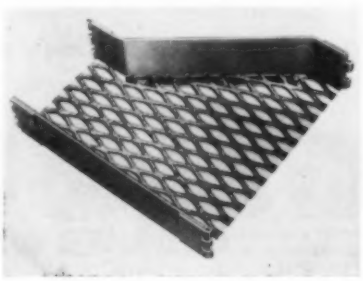
H. B. LARGE ENGINEERING CO.

262 S. Parkwood Ave.
Pasadena, Calif.

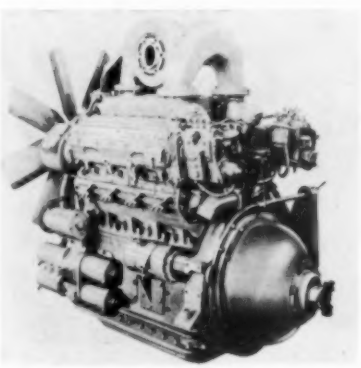
● Allis-Chalmers Manufacturing Company has introduced its new TS-260 motor scraper, a 200-hp. unit weighing approximately 39,600 lb. Features include two-speed steering, resulting in unusual maneuverability, and synchronized four-wheel air brakes. A hydraulic pump, gear driven from the rear of the engine crankshaft, provides positive drive and assures constant live power for steering and scraper operation. The curved bottom and three piece cutting edge with offset center edge give faster penetration and better loading. Positive forward ejection and high apron lift provide fast, clean spreading. The all-steel welded box-type frame gives rigid support and maximum true alignment of the power train. Ease of operation is provided by conveniently positioned controls, "control tower" visibility, and the 24-v. "turn-key" electric starting system. Accurate distribution of weight permits greater traction, flotation, and tire life. ↑ (56)



● Designed primarily for use with Lipe-Rollway's direct pressure clutches for heavy-duty trucks and off-the-highway vehicles, a 14-in. spring dampener has been added to its present line. The dampener is equipped with a flexible center, which absorbs torsional vibrations and cushions the amount of torque shock transmitted to the drive line whenever the clutch is engaged. Lipe-Rollway Corporation also manufactures four other types of driven disc assemblies: the cyclic balancer type, single coil dampener type, duplex coil dampener type, and the rigid type. ↑ (57)

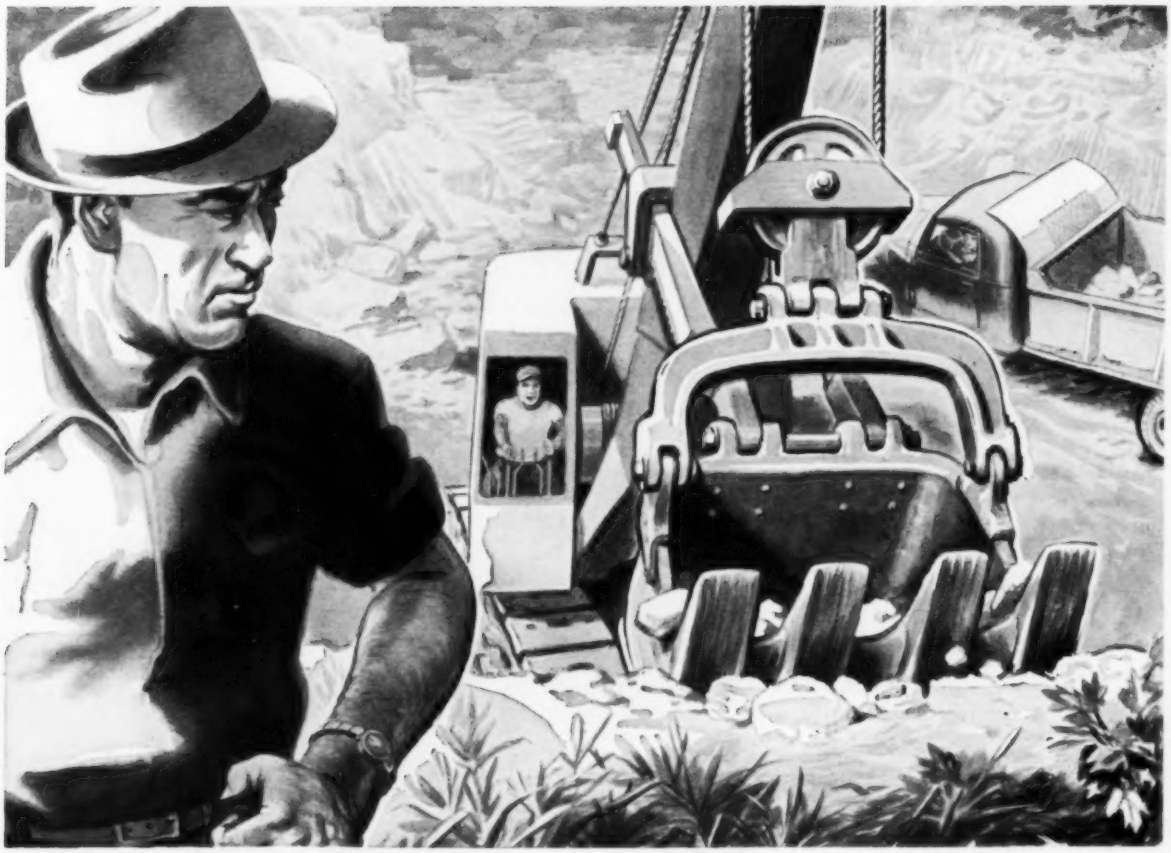


● Three series of Turbo-Charged Diesels, the TCD-501, the TCD-895, and the TCD-1468 (pictured above), are offered by Hercules Motor Corporation. The TCD-501, a 6-cylinder model, produces 178 hp. at 2,000 r.p.m. The TCD-895 is also a 6-cylinder engine, and develops 320 hp. at 2,000 r.p.m. The turbo-charger on these two models may be positioned to fit the particular application. The TCD-1468, an 8-cylinder Vee type model, develops 520 hp. at 2,000 r.p.m. The turbo-charger is located in the Vee. ↓ (58)



● T. J. Cope, Inc., has introduced the offset reducer, a new fitting for its cable supporting system of prefabricated expanded metal trough. The offset reducer is available with left hand and right hand bends, and in any combination of standard widths of 6, 9, 12, 18, and 24 in. A straight reducer is also available in the same combinations. Expanded metal cable trough is widely used as a continuous support for power and control cables. A unique feature of the Cope System is the pin-type coupler that simplifies and speeds installation. ← (59)

It's time to compare . . . with LINK-BELT SPEEDER



Shovel-Crane owners!

Paying for power you never get to use?

Link-Belt Speeder machines are built to take full advantage of the "bonus" horsepower available in shovel-crane engines!

SIZE for size, a Link-Belt Speeder gives you more *usable* horsepower. You get more line pull, more power at the bucket teeth . . . more power to swing, hoist and travel. That's because a Link-Belt Speeder takes more power out of its engine!

You see, a Link-Belt Speeder is built with extra strength—strength to handle greater horsepower. Thus, the engine in a Link-Belt Speeder can be (and is) set to deliver the greater horsepower for which the machine is designed. Link-Belt Speeder gives you a bonus of up to *40% more usable horsepower than machines using the same make and model engine!* And, in every instance, the engine in a Link-Belt Speeder is run at speeds well within the manufacturer's recommendations.

How to compare

Your Link-Belt Speeder distributor will furnish complete specification information. Check sizes and materials in Link-Belt Speeder shovel-cranes that allow you to use the actual horsepower you are paying for. LINK-BELT SPEEDER CORPORATION, Cedar Rapids, Iowa. 14,154

LINK-BELT SPEEDER

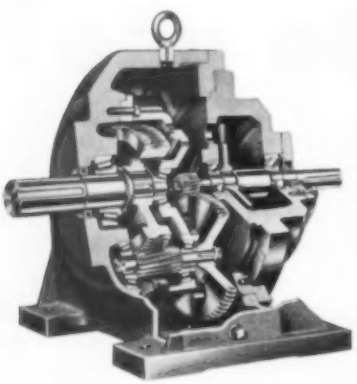
Builders of a complete line of shovel-cranes . . . with exclusive Speed-o-Matic power hydraulic controls

New IN-LINE Speed Reducers...

FLEXIBLE... ECONOMICAL... EFFICIENT

The streamlined compactness of these new units makes them ideal for mounting in places where space is limited. Accurately manufactured helical gearing, rugged housing construction and precision mounted shafts and bearings assure long, dependable service, with a minimum of maintenance. The *new* Phillie Gear "IN-LINE" Reducers are available in 18 different sizes and gear reductions to suit most types of service. Available for mounting in various positions... Standard AGMA ratios from 1.25:1 to 205:1.

Send for illustrated Literature describing these money-saving Speed Reducers.



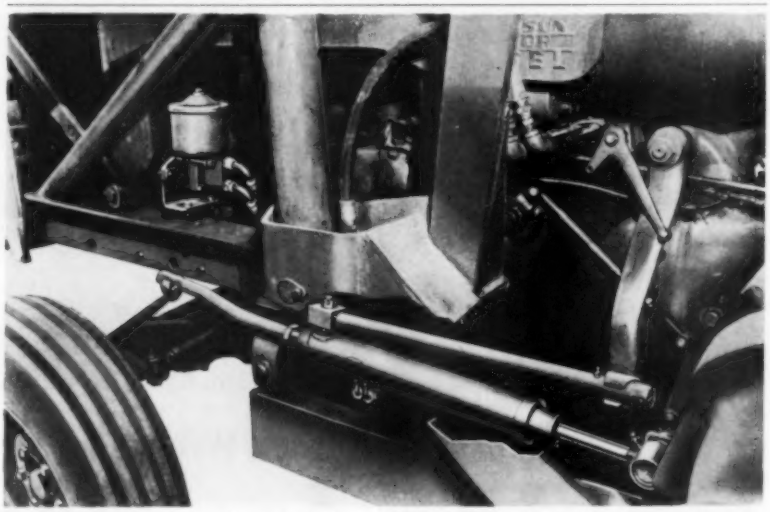
phillie gear®

PHILADELPHIA GEAR WORKS, INC.
ERIE AVE. & G STREET, PHILADELPHIA 34, PENNA.
Offices in all Principal Cities

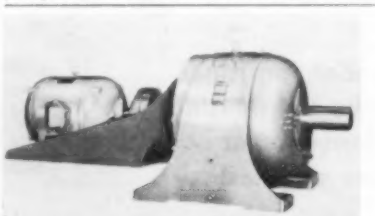
INDUSTRIAL GEARS & SPEED REDUCERS
LIMITORQUE VALVE CONTROLS
FLUID AGITATORS • FLEXIBLE COUPLINGS

Virginia Gear & Machine Corp. • Lynchburg, Va.

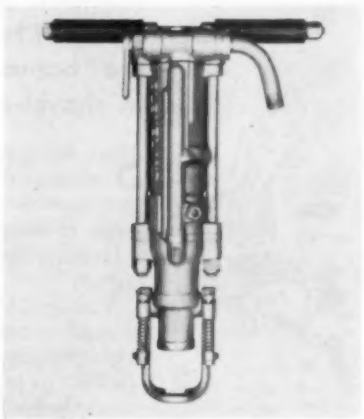
• An increased rating to 25 tons and a new chassis incorporating the Clark Power Train are features of the Michigan T-24 excavator-crane introduced by the Construction Machinery Division of Clark Equipment Company. The Power Train consists of a five-speed transmission, a two-speed transfer case and planetary wheel driving axles. Safety and ease of operation are provided by a hydraulic steering booster and all-wheel air brakes. The new truck chassis is of all-welded construction. ▲ (60)



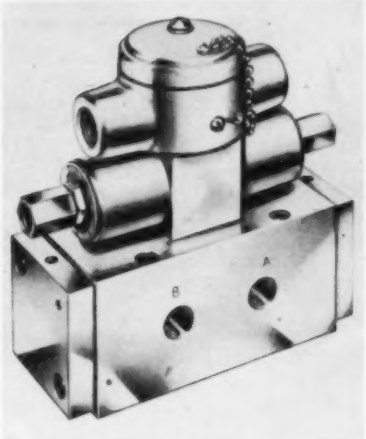
• Adaptable to the Fordson-Major diesel tractor, a new hydraulic power steering unit has been added to the tractor accessory line of Sherman Products, Inc. The steering device is comprised of a combination hydraulic servo valve and cylinder. Powered by a self-contained pump and reservoir unit driven by a V-belt from the generator pulley on the tractor. An important advantage of the unit is in making steering easier when the front of the tractor is weighted down by a heavy attachment. Simple design reduces mechanical failure and provides rapid installation time. ▲ (61)



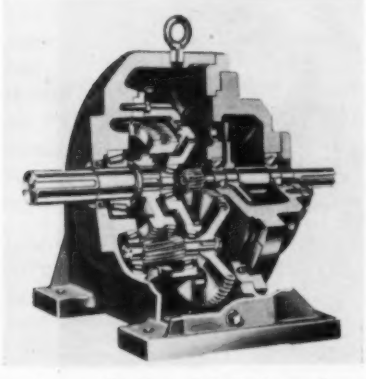
• Foote Bros. Gear and Machine Corporation has developed a new line of motorized reducers, the Line-O-Motor. Standard Line-O-Power reducers are equipped with a specially designed motor support bracket. The reducer base supports both reducer and motor, simplifying installation and shaft alignment. Line-O-Motor capacity ranges from 1 to 75 hp. for any A.G.M.A. service classification. Double, triple, or quadruple reductions provide a selection of ratios from 5.06:1 to 238:1. Line-O-Motor is available in horizontal models for foot mounting or in vertical and vertical extended housing models for flange mounting. ◄ (62)



• Faster drilling speeds and increased hole footage have been achieved in the Le Roi-Cleveland H-10 sinker drill as a result of recent modifications. The changes incorporate the use of a new valve and valve block, which are interchangeable with those previously used in the H-10 sinker drill. By increasing the metering limits of the valve and the valve block, fast drilling speeds are possible in both hard and soft formations. The light weight (45 lb.) and the new speeds reduce drilling costs. **(63)**

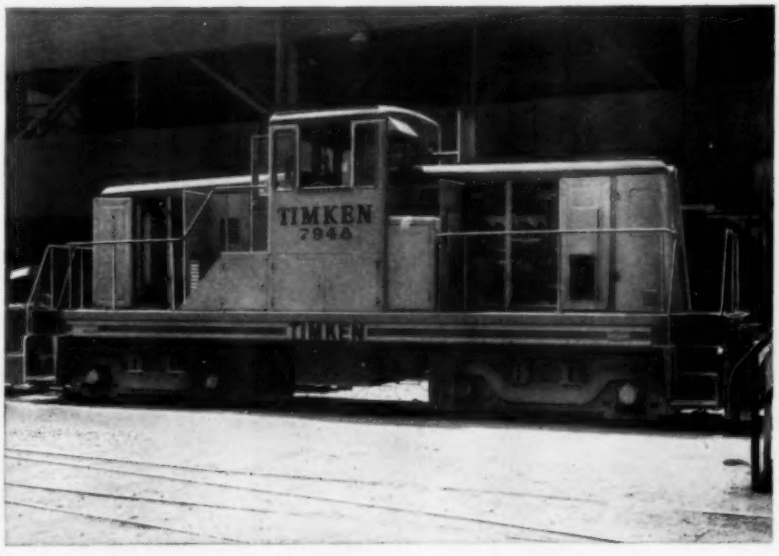


• Dependable performance, safe operation, easy maintenance, and clean-cut design are advantages of the new Flo-Line solenoid air valves developed by Hanna Engineering Works. Flo-Line valves are used for controlling air cylinders and other air-operated devices, and are available in sizes of ¼, ⅜, ½, ¾ and 1 in. Hanna Flo-Line valves are dust-tight and splash-proof. "O" ring seals afford protection against leakage and are easily replaced. **(64)**



• A versatile line of helical speed reducers has been developed by the Philadelphia Gear Works to meet the need for heavy-duty, low-cost gear drives on conveyors, packaging machines, and process installations where mounting flexibility is important. Eighteen sizes of these new in-line speed reducers, in single double, or triple reduction, are available. The units feature quiet, induction-hardened helical gearing; oversize thrust bearings; extra-heavy steel shafts; large overhung load capacity; and durable cast-iron housings. **(65)**

TURBO-CHARGING IS NOT NEW AT HERCULES!



2 HERCULES TCD's*

24,242 hours of service in 39 months

Since March, 1953, two Hercules 6-cylinder TCD's have been providing dependable and economical power for this 80 Ton G. E. Diesel-Electric Yard Locomotive #7948. Operating in the melt shop of The Steel and Tube Division, The Timken Roller Bearing Company, these two Hercules TCD's are establishing new records for continuous trouble-free service.

According to log sheets kept by the Timken Company's locomotive shop foreman, this equipment has operated 24,242 hours since it was put in service. Moreover, these hours have been logged under adverse conditions of extreme dust and heat, 24 hours a day, seven days a week for an average of 621 hours a month. Because of this record of performance this locomotive has been nicknamed "Old Reliable" by the men in yard. "Old Reliable" has been serviced under the Timken Company's preventive maintenance program. The TCD's were overhauled at approximately 14,000 hours and will have almost that many hours before the next overhaul.

Other applications of Hercules TCD's such as busses, generator sets, mine cars, marine applications, etc., have established similar record of power and performance. Yes, Turbo-charging is not new at Hercules. TCD is just a new name for a tried and proven product.

*Turbo-Charged Diesel

HERCULES MOTORS CORPORATION

CANTON, OHIO

Shovel-loading big-chunk rock into Dumptor — square body opening provides 64 square feet of target for easy loading over the side, or either end. It's the heavy-duty hauling unit with a ton of strength for every ton of payload capacity!

Plenty of power on the haul — (check high ratio of H.P.-to-loaded-weight in Dumptor story on next page). Dumptor also travels at same speeds in either direction for fast, no-turn shuttle hauling.

One-second gravity-dump speeds haul cycles. Dumptor has no troublesome body hoist, no hoist maintenance. Gravity-dump never balks, and never wears out.

IN ROCK LIKE THIS

you need Dumptors

When you are loading 1½ to 2½ yards of rock at a single pass, hauling units need plenty of strength to last. With Koehring heavy-duty Dumptor, there's a ton of strength for every ton of payload capacity. *It's built for rock.* Sides and ends of all-welded 6-yard body are heavily rib-reinforced. Double-plate bottom, lined with multiple steel beams, cushions the shocks of rock loading. Bolted or free-swinging kick-out pan adds another ½" steel plate to Dumptor bottom for extra strength.

There's plenty of strength, too, in the heavily-trussed chassis to take constant pounding of heavy loading and rough, off-road hauling. What's more, Dumptor has no leaf springs — just one big snubber-type chassis spring on the steering axle — none on the drive axle. Big drive tires eliminate the need for more springs, absorb loading and hauling shocks — save spring maintenance.

Even with all this heavy-duty strength, Koehring Dumptor® still has more than 6 H.P. for every ton of loaded weight. It accelerates fast, pulls through soft ground with less shifting, climbs 24% grades fully loaded. If you have a tough hauling problem, see your Koehring distributor about this heavy-duty 6-yard Dumptor. Why not call him now?

KOEHRING COMPANY

MILWAUKEE 16 WISCONSIN
CK642

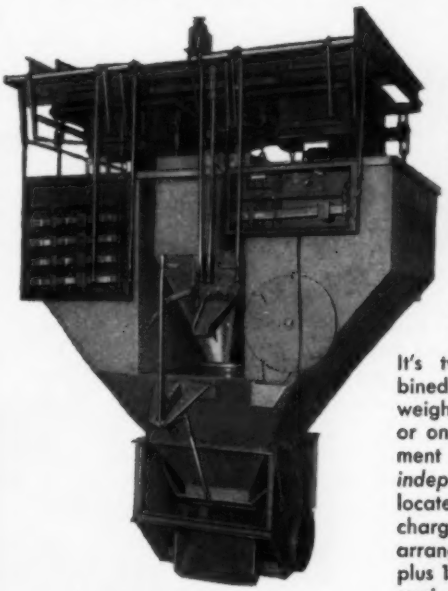
Subsidiaries: JOHNSON PARSONS KWIK-MIX

Accurate water weigh-batching

assures close quality control in production of ready-mix concrete. When water is batched by weight, accuracy is not affected by changes in water temperature — regardless of whether cold water is used in summer, or heated to 180°F. in winter. Reservoir type batchers also maintain top-speed weighing, even where low water pressure is encountered. To get this speed and accuracy in your plant, specify a Johnson water batcher.

2 sizes: 120-gallon (1,000 pounds) for batches up to 3 yards, and 240-gallon (2,000 pounds) for batches up to 6 yds. Semi- or full-automatic.

2 WAYS to increase batching efficiency



Central cement-feed

prevents "gumming", reduces dusting, and pre-shrinks materials. You get this unique advantage with Johnson Concentric batcher, because the aggregates are arranged concentrically around the cement. All ingredients are intermingled as they flow through discharge.

It's two separate batchers combined in one unit. Aggregates are weighed on accumulative dial scale, or on individual beam scales. Cement is weighed separately on an *independent scale* in a centrally-located, sealed hopper. Dual discharge available. Sizes: 2 to 8 yds., arranged for 2 to 8 aggregates, plus 1 to 4 types of cement. Manual, semi- or full-automatic operation.

Want more facts?

mail to: C. S. JOHNSON CO., Champaign, Ill. (Koehring Subsidiary)

Send us literature on: ☐ Water batchers ☐ Concentric batchers

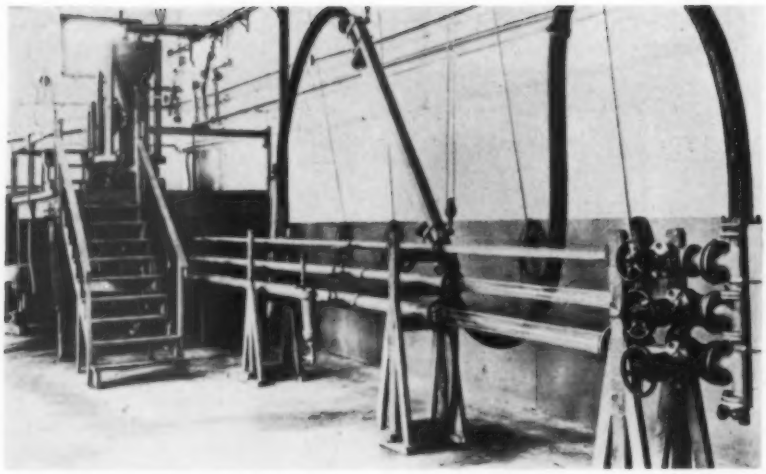
NAME _____ TITLE _____

COMPANY _____

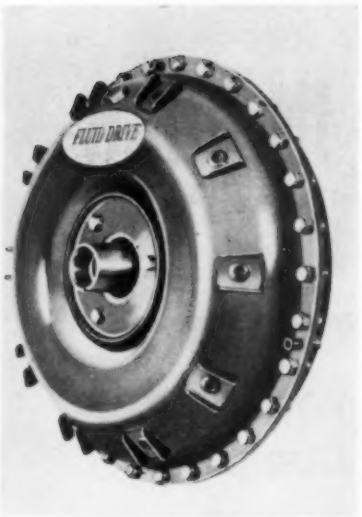
STREET _____

CITY _____ STATE _____

V2 PO

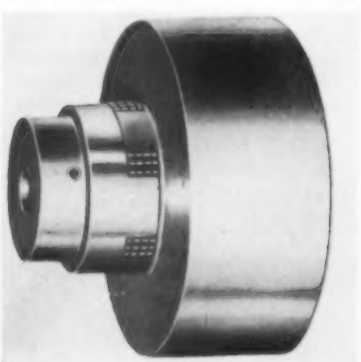


• With this new slurry test laboratory engineers of the Morris Machine Works are able to determine in advance friction losses and critical carrying velocities of particular slurries. By knowing these factors in advance, Morris Machine Works is able to recommend more accurately the most efficient pump and pipe sizes to handle a particular slurry. The laboratory equipment includes 2-, 3-, and 4-in. lines in a closed loop system. A Morris 3-in. Type R pump, driven by a variable speed motor, helps provide a wide range of flow conditions for testing purposes. In addition to accurate instrumentation which records pertinent data, the flow characteristics of a slurry can be watched through sections of glass pipe. ↑ (66)



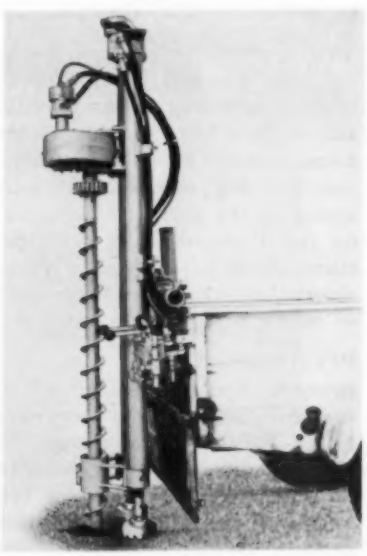
• Designated Size 126 Type T, a new improved traction type Gyrol fluid drive is now available from the American Blower Corporation. The basic unit is designed for industrial use with internal combustion engines as a fluid power transmission for material-handling vehicles. The new size 126 provides shock isolating, smooth starting and torque limiting characteristics for a variety of industrial drive applications. Installation is simple for both internal combustion engine and electric motor mounting arrangements. ↑ (70)

• A new type coupling, now available from Lovejoy Flexible Coupling Company, incorporates a brake flange on the outer diameter, providing compact, space-saving drive arrangement. The new brake drum coupling is available in eight standard sizes, with horsepower ratings from 2 to 40 at 1,750 r.p.m. Maximum bores of the hub body range from 1 in. to 2½ in. ↓ (68)



• New check bars, made of 1¼-in. alloy steel, are now standard equipment on all Galion trailer dumps with underbody hoists. These check bars are said to protect the hoist cylinders by preventing over-travel of the body when dumping sticky loads; they also prevent pulling out of the cylinders caused by the body being raised beyond maximum dump angle to dislodge the load. ← (67)

• Atlas Copco Eastern, Inc., has developed a gasoline-powered drill and breaker that can drill up to 26 ft. per hour through hard granite, yet weighs only 53 lb. Designated the Cobra, the drill features a newly-designed floatless carburetor which permits drilling in all positions from straight down to 45 deg. upward. The Cobra is powered by a one-cylinder, two-stroke gasoline engine and will drill about 75 ft. of hole per gal. of fuel. ↑ (69)



• A general purpose drill, mountable on a flat-bed truck, tractor, or other type vehicle equipment, is available from the Cardox Corporation. The hydraulically controlled and operated drill can be used in any fore-and-aft or lateral direction at any angle from horizontal to vertical. Power is supplied by a power take-off on the carrier vehicle. ↑ (71)

Niagara Stone Corp.

like air controls, ease of operation in their NEW

2½-yd. LORAIN-85

Proof that Niagara Stone Corp. of Niagara Falls, New York, like Lorains is the fact that they have just purchased a new 2½-yd. Lorain-85 Shovel. A previous 1¾-yd. Lorain-80 Shovel served them long and well —digging many hundreds of thousands of yards of tough dolomite limestone. When Niagara Stone Corp. again was in the market for a new shovel, Lorain was their choice for the second time.

Niagara's new 2½-yd. Lorain-85 is shown in the photo. It is quarrying shot rock against a 20-ft. face at their limestone quarry. The Lorain loads 15-ton trucks in 3 minutes each for hauling to the rock crusher and works a steady 9 hours a day. An average of 250 tons per hour is loaded out by the Lorain.

Niagara Stone Corp. report they are well pleased with the new Lorain-85, particularly the new "Metered-Air" controls. They report these controls add greatly to ease of operation in the 2½-yd. shovel.

There are many other modern features in Lorain-85's that contribute to operating efficiency and big production. The 3-shaft turntable design permits simultaneous hoist, swing and travel. The double center drive power transmission applies maximum engine power to all operations. A torque converter power take-off is available for the most productive digging results. The new "Metered-Air" power is applied to easily operate hoist, crowd, retract, travel, boom derricking and lowering clutches. In addition, the big "85" is equipped with a new, huskier 26-ft. shovel boom for greater digging ranges. You will find the Lorain-85 Shovel a real, heavy-duty money-maker for the most demanding digging duty.

See your Thew-Lorain Distributor for facts about the 2½-yd. Lorain-85 . . . get the story about the new "Metered-Air" controls and the many other features that you will want in your next shovel!

THE THEW SHOVEL CO., LORAIN, OHIO

THEW LORAIN®

There is No Worry about Failures or Maintenance Costs with TRU-LAY *PUSH-PULL* Remote Controls

• On Heavy Equipment they are being adopted by an ever-increasing number of engineers because they are Rugged, Trouble-Free, Accurate and Adaptable to all sorts of mechanical situations.

Long Life is a matter of record. We have never heard of a TRU-LAY *Flexible* PUSH-PULL CONTROL wearing out in normal service. Failures, that sometimes harass users of more complex controls, are eliminated by the use of these simple, positive-action Push-Pulls.

Dependable Operation of these controls is a certainty, even under the most adverse conditions . . . HOT as jet engines (Note: TRU-LAY PUSH-PULLS are actually performing on hot jet applications) . . . COLD to 70° F. below zero . . . SOAKIN' WET . . . ABRASIVE . . . or just plain TOUGH.

Freedom from Trouble is assured because of such features as . . . full protection of the inner, working member by the tough flexible conduit . . . lubrication of the working member *for life* during assembly . . . seals that keep moisture, dust and other foreign matter out of the unit . . . cold swaging of fittings that makes them integral parts of the control unit.

Accuracy is inherent in the basic design of TRU-LAY PUSH-PULLS. They are precision products, not gadgets.

Capacity ranges from light jobs up to jobs of 1,000 lbs. input. These Push-Pulls will handle jobs 150 feet or more from the control point.

Adaptability to all sorts of mechanical situations explains, in large measure, the use of TRU-LAY PUSH-PULLS on literally hundreds of different machines and equipment. The *flexibility* of these controls makes it possible to provide positive, remote-action whether anchorages are fixed or movable . . . it damps out noise and vibration . . . and reduces the number of working parts.

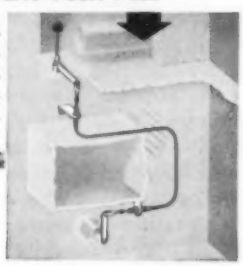
• • •

TRU-LAY PUSH-PULLS are "Solid as a rod but *Flexible* as a wire rope." This flexibility makes it possible to snake around obstructions . . . permits the ideal arrangement of all elements of remote controls.

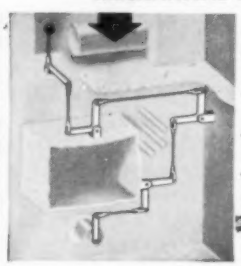
***Advantages** of Tru-Lay Push-Pull flexibility and simplicity are pictured below*

TRU-LAY PUSH-PULL

Simple
One Moving Part
Life-Time Service
Life-Time Accuracy
Low over-all Cost
Noiseless



MECHANICAL LINKAGES



Complex
Many Parts
Many Points of Wear
Increasing Back-Lash
Loss of Accuracy
Vibration
Rattles

Widely Used on Heavy Equipment

• These accurate and dependable Remote Controls are used on a wide range of Construction Equipment . . . Tractors and their accessories, Power Shovels, Winches, Graders, Road Oilers, Dump Trucks, Snow Plows, Engine-driven Pumps, Crushers, etc.

On such equipment TRU-LAY PUSH-PULLS are used for the remote control of Transmissions, Hydraulic and Air Valves, Brakes, Clutches, Throttles, Chokes, Governors, Power Take-Offs, and on many other applications.

Our DATA FILE will answer your further questions
Write for a copy, without obligation

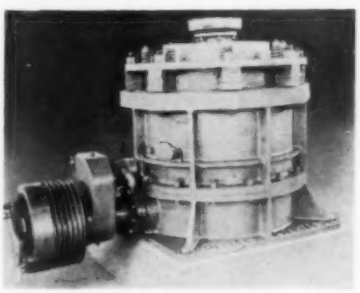
Push-Pull DATA FILE

ACCO

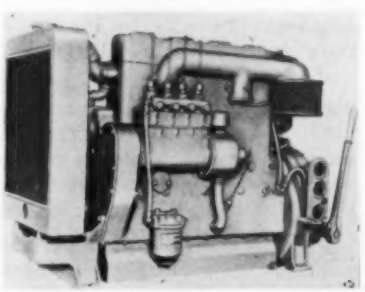
AUTOMOTIVE and AIRCRAFT DIVISION
AMERICAN CHAIN & CABLE

601-K Stephenson Bldg., Detroit 2
2216-K South Garfield Ave., Los Angeles 22 • 929-K Connecticut Ave., Bridgeport 2, Conn.

• An all-purpose face shield, featuring a completely flexible headband, has been introduced by the Chicago Eye Shield Company. The Cesco 770 shield comes in three window lengths—4 in., 6 in., and 8 in. Cellulose-acetate windows mount inside an aluminum channel in a tight assembly which is impervious to dirt and liquid. The headband, made of vinyl plastic, is adjusted by a sliding strap. (72)



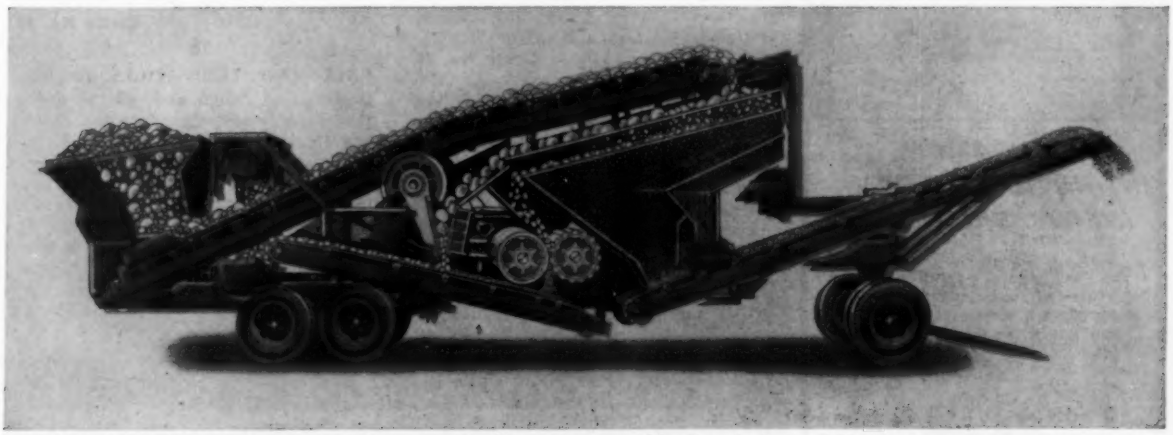
• Features of this gyratory fine reduction crusher, the latest model available from the Straub Manufacturing Company, Inc., include choke feeding, extremely low headroom, and "crushing without rubbing". Designated as a 28 in. size, the crusher is available with fine, medium, and coarse bowl liners to suit different feed sizes and products. Receiving openings range from 1¾ in. to 3¾ in. Discharge settings range from ½ in. to 1¼ in. The capacity is from 10 to 75 t.p.h. (73)



• Model 19, a new, compact, 4-cylinder diesel of 153.6-cu. in. displacement, was designed by the R. H. Sheppard Company for use as replacement power where service conditions are too rugged for gasoline engines. Features include rugged, heavy-duty construction, wet type replaceable cylinder liners, directional oil cooled pistons, full pressure lubrication, and trimetal precision type bearings between each throw and at each end of the crankshaft. (74)

YOU NAME THE JOB

there's a UNIVERSAL CRUSHING PLANT ready to make shorter work of it



Universal 880 Gravelmasters—complete, compact crushing, screening and loading plants. Available in a range of sizes with reported capacities of 75 to 400 tons per hour.

What kind of output capacity do you need to operate at the best margin of profit? Big capacity? All you can get? Universal jaw crushers are available in sizes up to 44" x 48"; roll crushers up to 54" x 24"; impact breakers up to 57" x 60". And you can get Universal screening, loading and washing equipment in all sizes, too, to give you the right combination for profitable operation.

Need big capacity in a portable plant?

The Universal 880 Super Senior Gravelmaster comes with 40" x 24" rolls; 10" x 36" jaws . . . with plenty of screening and conveyor capacity to take care of the huge crusher output.

Is this more capacity than you need?

Perhaps the Universal 880 Junior "B" fits your requirements best. The 880 Gravelmasters come in a wide range of sizes. Any one of them can be used as a complete gravel crushing, screening and loading plant. Or, as a "secondary" in combination with Universal 546P primary units ranging in jaw size from 15" x 24" to 30" x 42".

Tell us your job requirements— write to the address below or consult your distributor. You'll get a carefully considered recommendation fitted to your needs.

MODEL	Junior "B"	Junior	Senior "A"	Super Senior
Jaw Crusher	10"x16"	10"x24" 10"x36"	10"x36"	10"x36"
Roll Crusher	18"x16"	24½"x16"	30"x26"	40"x24"
Gyrating Screen	2'x8' 2½	3'x10' 2½	4'x12' 2½	5'x12' 2½
Plate Feeder	19"	19"	25"	25"
Weight	28,600#	44,500#	54,000#	59,600#
CONVEYORS				
Under Conveyor	18"x10'	24"x14'	30"x18'	30"x19'
Feed Conveyor	20"x23'	24"x26'	30"x29'	36"x34'
Delivery Conveyor	24"x18'	24"x20'	30"x21'	30"x24'
	Front Discharge Folding	Front Discharge Folding	Front Discharge Folding	Front Discharge Folding

PETTIBONE UNIVERSAL
In Cedar Rapids, Iowa since 1906

UNIVERSAL ENGINEERING CORP.
619 C Ave. N.W., Cedar Rapids, Iowa

A Subsidiary of Pettibone Mulliken Corporation, 4700 W. Division St., Chicago 51, Illinois

TORTURE-TESTED

BY

ROCK AND SAND

:VIBRATION:
:HOT BEARINGS:
:HEAVY SHOCK-LOAD:

Yes — These are the day-to-day tortures of lubricants in the rock and sand business — and they have to be *rugged* in order to "take it."

LE

1020

HIGH TEMPERATURE LUBRICANT

Keeps Your Equipment On The Job!

Where other lubricants fail — you'll find that LE #1020 will "stay put" in shovel, crusher, conveyor, and similar bearings. The reason for better performance is because #1020 is *engineered* for the toughest kind of lubricating applications. This means more profitable production with minimum maintenance expenses.

It Pays To Use The Best!

For further information on this or other LE engineered lubricants, write, wire or phone.

LUBRICATION ENGINEERS, INC.

FORT WORTH, TEXAS

INDUSTRIAL LUBRICANTS FOR INDUSTRIAL EQUIPMENT

P & Q product briefs

(use reply card for more information)

WOUND ROTOR MOTORS have been designed by the *Allis Chalmers Manufacturing Company* for use wherever high starting torque with low starting current is needed; power supply is limited; intermediate speeds are required; smooth acceleration is desired; or where high inertia loads must be accelerated. Applications of these motors include driving fans, blowers, hoists, lifts, cranes, conveyors, crushers, and mills.

Circle No. 75

●

THE ELECTRIC EAR grinding mill feed control, manufactured by the *Hardinge Company*, is an electronic device which automatically regulates the flow of wet or dry feed material to a continuous grinding or pulverizing mill, based upon the grinding sound level. The Electric Ear maintans constant mill loading, prevents overloads, and is said to increase mill grinding efficiency up to 20 percent.

Circle No. 76

●

A NEW HYDRAULIC-POWERED, flat steel strapping combination sealer and stretcher with a built in waste cut off shear has been developed by the *Gerrard Steel Strapping Division, United States Steel Corporation* for the tying of bulky and heavy items. This new model accommodates ¾-in. and 1¼-in. U.S.S. Gerrard heavy-duty flat steel strapping.

Circle No. 77

●

CONVEYOR ROLL BEARINGS produced by the *Marlin-Rockwell Corporation* provide a simple and economical means of reducing friction in conveyor rolls with low operating costs. Designs have been developed for both inboard and outboard mountings utilizing various types of seals, in synthetic rubber and cork-felt combinations, to hold grease in and keep dirt out.

Circle No. 78

●

THE SYMONS VIBRATING BAR GRIZZLY, manufactured by the *Nordberg Manufacturing Company*, is a high capacity scalping unit for large tonnage operations dealing with feed size up to 30 in. and larger. The vibrating motion of the manganese steel bars prevents clogging. The compact, heavy-duty machine has a capacity of up to 1,000 t.p.h., and is recommended by the manufacturer for scalping service with materials that are wet, sticky, or gummy.

Circle No. 79

●

THE TD-6 DIESEL CRAWLER TRACTOR, manufactured by the *International Harvester Company*, features new engine power, stepped up 23 percent to 41.5 hp.; a new hinge-type seat, which permits easy lubrication of the steering clutch assemblies; improved visibility for the operator; a cermatellic clutch; a pressurized cooling system; and an improved lubrication system.

Circle No. 80

THE CYCLO-TRELL multiple tube dust collector, developed by *Research-Cottrell, Inc.*, operates on centrifugal collection principles. Inlet vanes are designed to increase collection efficiency, by creating a faster, smoother gas flow in the tubes. Outlet vanes are positioned to decrease entry losses, and recover energy at the outlet tubes, thus increasing capacity.

Circle No. 81

●

BALL AND TUBE MILLS, featuring simplicity of design and ease of operation, have been designed by the *Patterson Machine and Foundry Company* for continuous grinding in open or closed circuit. The mill charge of grinding balls or rods hammers, rubs, and disintegrates the material in continual cascade as the mill rotates. Because the product is processed in a closed cylinder, it is uncontaminated by oil or grease leakage.

Circle No. 82

●

ENGINES AND TRANSMISSIONS, manufactured by *Minneapolis-Moline*, supply ground drive power for many industrial equipment designs, including high lift loaders, mobile cranes, and spreaders. 30-, 40-, 55-, and 70-hp. engine sizes are available with regular, torque increaser, or full reversing transmissions with heavy-duty industrial clutches and regular or live power take-off drives.

Circle No. 83

●

MODEL 125A CARRIER, manufactured by the *"Quick-Way" Truck Shovel Company*, can be converted quickly to any of the "Quick-Way" attachments for use as a trench hoe, crane, shovel, dragline, clamshell, pile driver, or magnet. Features include hydraulic controls, anti-friction bearings, quiet chain drive, and full-vision cab.

Circle No. 84

●

THE REXARC RP-43 automatic roll and idler welder, and positioner is designed and manufactured by *The Sight Feed Generator Company*. A versatile packaged unit, it is engineered for automatic welding on circular shapes such as rolls, idlers, sheaves, and crusher rolls. The Rexarc automatic head operates on higher than usual welding voltage, resulting in higher torque and faster speed response.

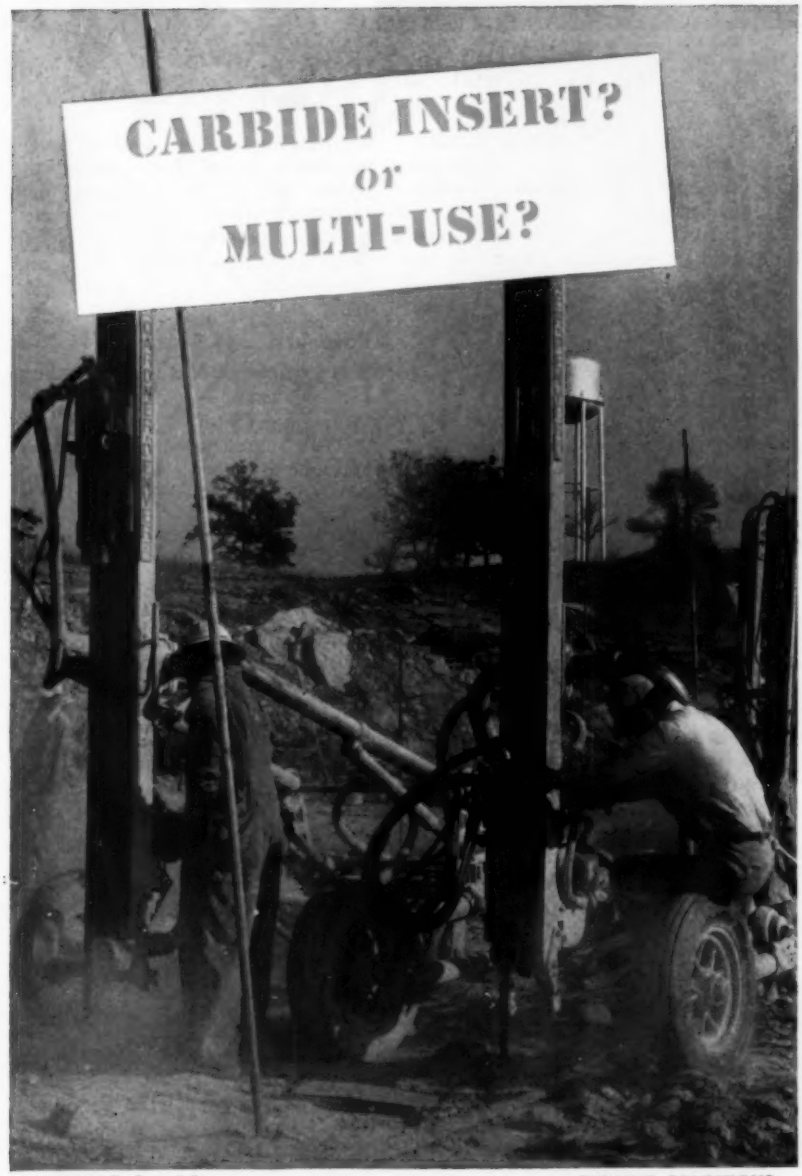
Circle No. 85

●

DUROLITE SHEAVES, used in *Sauerman's* Durolite wire rope blocks, are now available as a separate item. Durolite sheaves are designed for use with wire rope running at high line speeds in horizontal planes under heavy loads on Drag-Scrapers and Cableways. Lightweight, strong, and durable, the sheaves can withstand heavy rope pressures and are equipped with high speed bearings.

Circle No. 86

TIMKEN® multi-use bits give Oman Construction Co. lowest cost per foot of hole in drilling limestone



LOCATION: Industrial plant site, Nashville, Tenn.

DRILLING CONDITIONS: Medium hard limestone.

IN wagon drilling limestone on a 232-acre plant site in Nashville, Tennessee, Oman Construction Company got the lowest cost per foot of hole by using Timken® multi-use rock bits.

You can get similar savings with Timken multi-use bits. With correct and controlled reconditioning, they give the lowest cost per foot of hole when full increments of steel can be drilled in ordinary ground.

But multi-use bits may not be best for all drilling conditions. When you drill in hard, abrasive ground, Timken carbide insert bits are your best bet. With them you get higher speeds and greater economy on extremely deep hole, constant-gauge hole or small diameter blast hole work.

And your drillers save time changing bits when using Timken multi-use and carbide insert bits. They're interchangeable in the same thread series. Dozens of different Timken bits fit the same drill steel. They can be changed quickly and easily as the ground changes. Right on the job.

What's more, Timken rock bits give you these extra advantages: 1) they're made from the Timken Company's own electric furnace fine alloy steel; 2) they have special shoulder unions developed by the Timken Company that protect threads from drilling impact. Let us help you select the best type of bit for your jobs—cut your drilling costs. Write: The Timken Roller Bearing Company, Rock Bit Division, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN

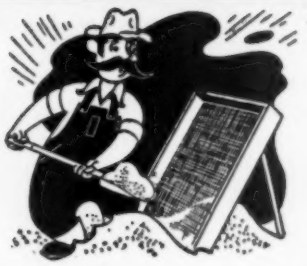
TRADE-MARK REG. U. S. PAT. OFF.

your best bet for the best bit for every job

Timken threaded multi-use rock bit

Timken threaded carbide insert rock bit

Screenings



by Ray L. Smith Jr.

THIS goes to you from Jack Tar's Key Colony in Marathon. The last episode in our stay in the beautiful Florida Keys, from which we depart in a very short time with many memories in our hearts of friendly people. In life, in business, does anything contribute as much as friendship?

What are Customer Relations if not HUMAN relations? Why are we stopping at the Key Colony? Because of the friendly letters received from Jack Tar, the owner. How could we ever let "Jack" down?

Members of the Greater Miami Building Owners and Managers Association must have been invigorated to read the following sentence in a recent bulletin from the office of their Executive Vice-President:

"*Skyscraper Management* recently carried a refreshing and thought-provoking treatise on the super advantages prevalent in downtown areas of cities without detracting from the essentials of dispersal of businesses the result of growth of cities and differentiating from the too loosely and often erroneously used term of decentralization."

Why is it that the lingo of some trade associations is so commonly overstarched? If you can emerge with the clear meaning of that sentence after one reading you are smarter than this old editor.

Equally confusing was one item in the obituary of a famous Florida personality of early days, appearing recently in the Miami *Herald*—"he married his widow."

Constable Had the Answer

INTERESTING to you who admire the ability of some people to say a lot in few words is the story, recently told, of the businessman who was already late for a meeting with his boss, but could not find a place to park. Around and around the block he drove. At last, he curbed his car in a forbidden spot, and left a note under his windshield wiper for "the law."

"I know I have parked illegally, but my job depends on it. I must get to the office immediately. Forgive us our trespasses."

Out of the meeting several hours later, the businessman hurried to his car. Under the windshield wiper was another note, signed "Police Constable."

"My job also depends on your illegal parking. Lead us not into temptation."

Bamboo-crete

BEHIND the Bamboo Curtain they're planning to build more and more houses with bamboo.

Peiping Radio says, "housing projects throughout Communist China will use floor slabs of bamboo-reinforced concrete." They call it *bamboo-crete*.

Peiping goes on to say, "bamboo-crete floor slabs, lintels and door and window frames were used in building houses in Canton and Wuhan last year. Experiments are under way with bamboo-reinforced concrete pit props, piles, drainage conduits and caissons."

There is an ample supply of bamboo in Red China and it is said to be a cheap and efficient structural element.

History relates that bamboo-crete has been used in China since 1915, but without the diligent research of leading scholars. A school built in Canton in 1918, with bamboo-reinforced floor slabs, is still standing and in excellent condition.

It should be noted that this public works project was completed under the expect tutelage of, One Lo Won and his number-one-boy, Go Like Helle. Bamboo pipeline equipment was used exclusively for water supply while the natural "Coolie-power" was literally harnessed to supply the driving force at the mixer. Four-hundred and eighty-seven coolies were lost on this venture as they persisted in getting their cues caught in the mixer hopper, to their momentary discomfort and ultimate demise.

If there's any chance of substituting bamboo for steel here at home, we ought to at least change the name. Maybe this fascinatin' new material could be called "bam-crete" or even "boo-crete." Anything, to set it apart from that used behind the curtain.

Potpourri and Succotash

It was one of Mother's busy days. Her small son came in with his pants torn.

"You march right to your room and take those pants off," his mother ordered.

Some time later she found the torn pants lying on a chair and the boy nowhere in sight. The door to the cellar was open and she called down loudly and sternly, "Are you running around down there without your pants on?"

A deep voice answered, "no ma'm, I'm just reading the gas meter!"

Willie was attending a house party. As he stood in a corner, a large woman with a plate of small cakes bore down upon him. "I'm your hostess," proclaimed the lady. "Could I interest you in a hot cookie?"

"No thanks," said Willie, "I brought my date along."

Little, demure Helen Hunt found a wallet containing $20.00. Being as honest as she was pretty, she reported her find to the local newspaper. They ran an ad reading—"The party who lost a wallet containing $20.00 can go to Helen Hunt for it."

Husband: "Dear, I have tickets for the theatre."

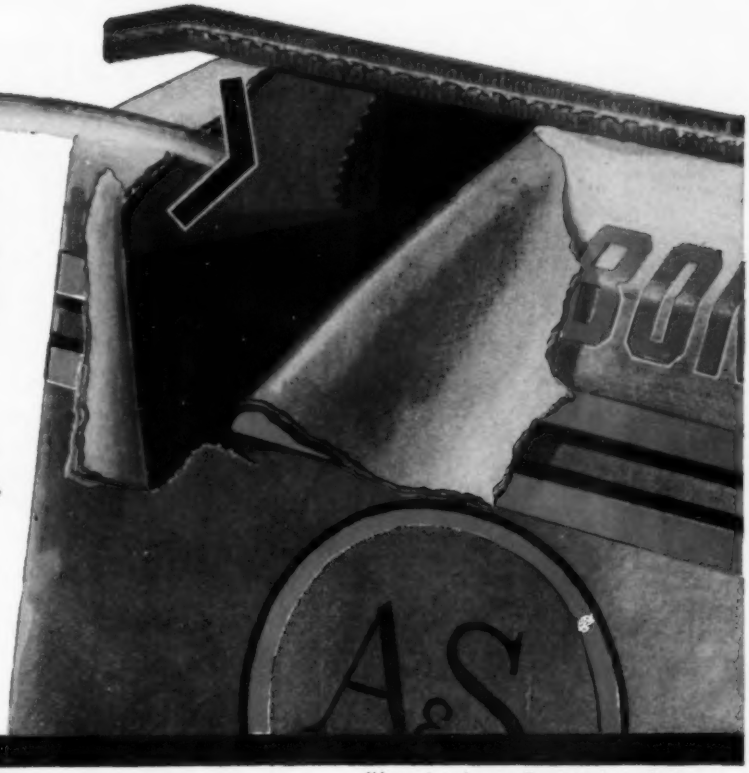
Wife: "Splendid! I'll start dressing at once."

Husband: "Yes, do. The tickets are for tomorrow night."

"I'm cutting quite a figure," said the chorus girl as she sat on a broken bottle.

the A&S

tilted valve bag*



*Licensed under pending patent application

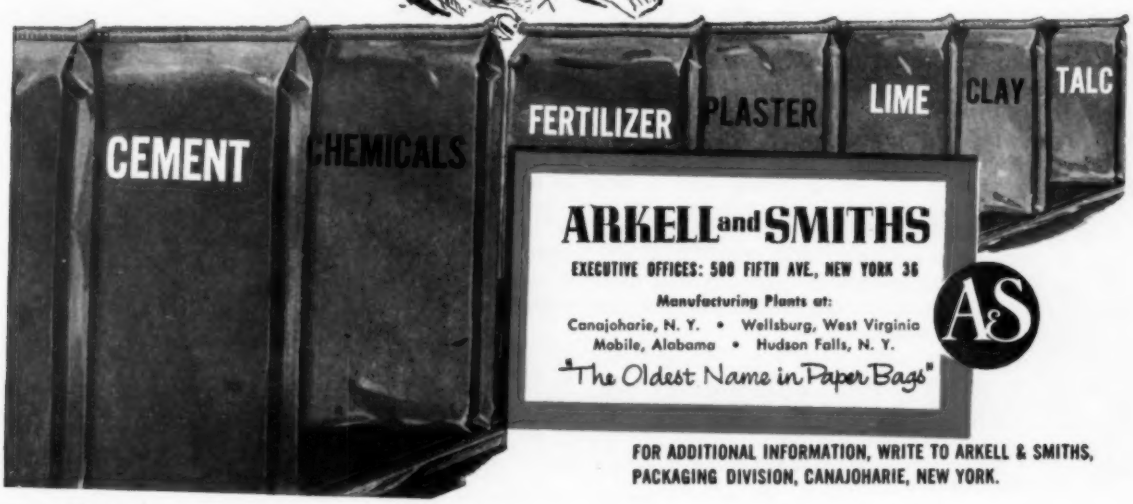
A NEW DEVELOPMENT FOR ROCK PRODUCTS!

The A & S Tilted Valve Bag is a must for manufacturers of lime, plaster, clays, cement and similar products. With the Tilted Valve, these bags are faster to put on the filling spout and are self-sealing in the true sense of the word . . . as the product reaches the top of the bag, the valve is automatically pinched shut to form a more positive, sift-proof seal — far more efficient than previous designs of this type.

The Tilted Valve can be furnished on any sewn valve multiwall bag, and what's more, there is no upcharge for bags with this improvement!

Arkell & Smiths multiwall bags are outstanding in design and printed in sparkling inks and have long been a favorite for shipping finely divided materials, both inert and hygroscopic. This new "Tilted Valve" feature is just one more reason why thrifty packers buy from A & S.

Let A & S take over your packaging problem today!

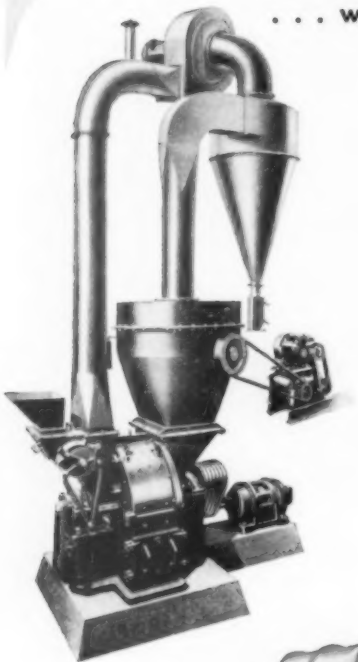


FOR ADDITIONAL INFORMATION, WRITE TO ARKELL & SMITHS, PACKAGING DIVISION, CANAJOHARIE, NEW YORK.

The RAYMOND *Multi-Purpose* IMP MILL

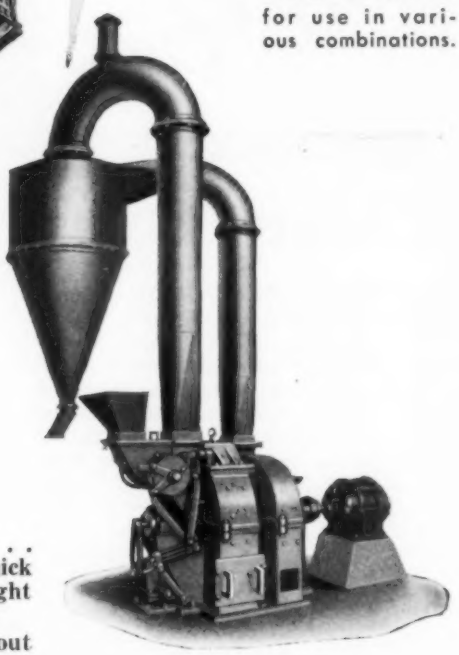
. . . the Answer to Your Grinding Problem

. . . with WHIZZER SEPARATOR
for fine pulverizing and classifying with easy fineness control.



. . . with FLASH DRYING
for removing moisture from the fine material while pulverizing.

. . . with STANDARD EQUIPMENT
for use in various combinations.



If you are under pressure to achieve still higher production . . . or if you have a special pulverizing problem that requires a quick solution . . . then this versatile Imp Mill may be just the right answer.

It is a compact unit that will fit readily into your plant layout and provide an economical installation for handling a variety of jobs simply by different arrangements of the equipment.

It offers scores of uses in the non-metallics industries: — For disintegrating, blending and classifying materials to make uniform, intimate mixtures . . . for grinding and drying in one operation . . . for making extreme fine powders in combination with a Raymond Mechanical Air Separator, or removal of fines for producing granular materials with supplementary screen separation.

Tell us your requirements in capacity and type of materials you produce . . . and Raymond engineers will be pleased to make specific recommendations.

Ask for Raymond's new Imp Mill Bulletin No. 77.

COMBUSTION ENGINEERING, INC.

Raymond Division

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CHICAGO 22, ILLINOIS

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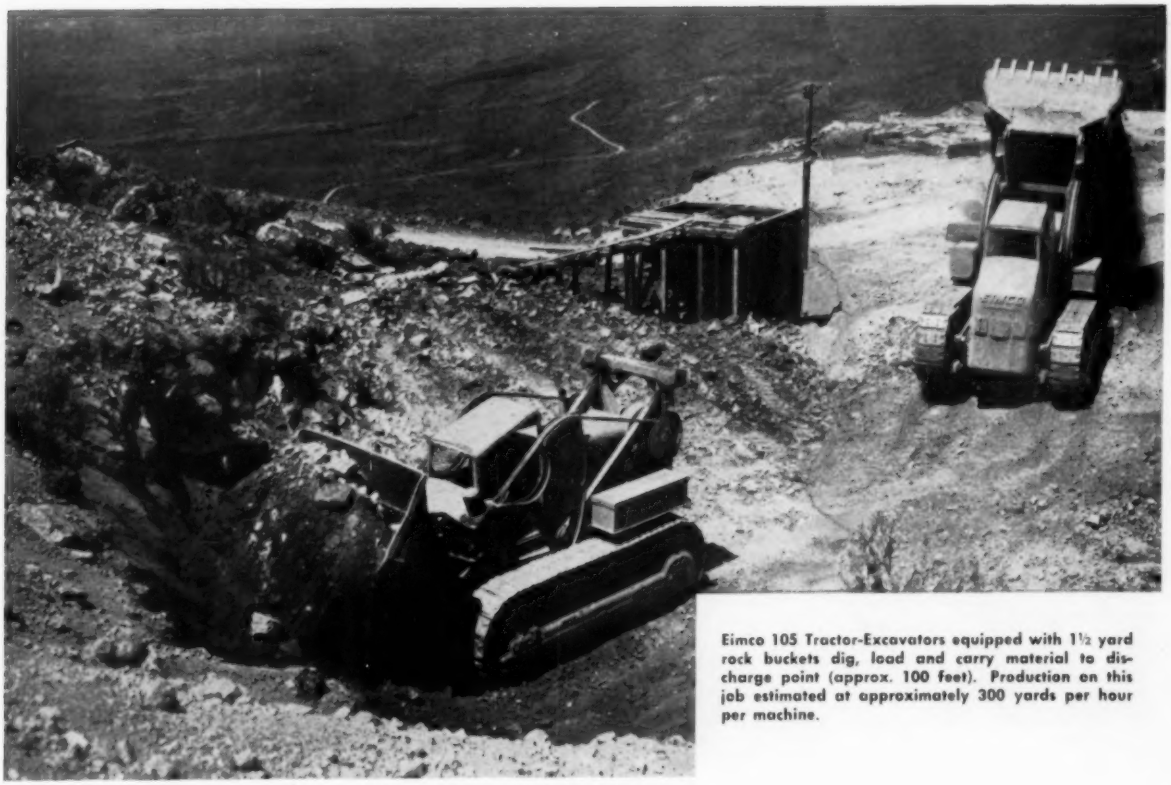

Eimco 105 Tractor-Excavators equipped with 1½ yard rock buckets dig, load and carry material to discharge point (approx. 100 feet). Production on this job estimated at approximately 300 yards per hour per machine.

SPEED, VERSATILITY AND DEPENDABILITY WITH EIMCO 105 TRACTOR-EXCAVATORS

Eimco 105 Tractor - Excavators, shown above, dig and load more rock at less cost per yard than any other earthmoving machine.

These Eimco Excavators are multi-purpose machines. They are easily and quickly moved from one spot to another where work is needed. They are used as prime movers, on production excavation and loading jobs, for bulldozing and other work around the plant.

In production work, the Eimco 105 Tractor-Excavator will load in rock at the rate of 5-6 yards per minute and in easier materials such as sand and gravel, the 105 will load as much as 8-9 yards per minute.

Eimco 105's do a better job than the conventional tractor mounted machine because of Eimco's exclusive operating features. Independent track operation increases the effectiveness of the machine in speed of maneuverability, saves travel time and wear and tear on track assemblies, chains and all crawler parts.

The Eimco power shift saves wear and tear on operators, keeps them fresh and alert all day long. Operator position up front makes it possible to see what is being done.

All cast-alloy steel parts are standard equipment on Eimcos at no extra cost. Torque converters, also standard, provide better engine operating flexibility and protect the engine from shock.

Eimco 105's are different in construction, design and operation. They are the only really modern tractors in production today. An Eimco engineer will be glad to tell you about the 105 and answer your questions. When you need a Tractor or Tractor-Excavator be sure to see an Eimco 105 at work, and talk to people using them. You are invited to compare the Eimco 105 Tractor, piece for piece with the tractor you are using or any other tractor.

THE EIMCO CORPORATION

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B-207

IDEAL'S *EXPANSION* AT BATON ROUGE...

BY BUREN C. HEROD

Another ON THE SPOT Report

WITH the recent completion of the $3,750,000 expansion project initiated last year by the Ideal Cement Company at its Baton Rouge, La., plant, this enlarged facility is now expected to produce about 2,750,000 bbl. annually—or an increase of approximately 25 percent over the previous 2,200,000-bbl. capacity. The extensive nature of the program, which was started in March, 1955, is evident in the components which were involved. These included the raw- and finish-mill departments, whose capacities were raised by the addition of a new mill in each; the construction of two new kiln feed tanks; four clinker storage tanks; two storage silos for additives, such as iron ore and sand, to the raw mix, and the conveying system necessary to introduce these materials into the process; a new 10- by 250-ft. kiln; and 15 new cement storage silos.

The comprehensive project which incorporated the above features is not the first effort expended by the company on this operation. Located on a 41-acre tract on the east bank of the Mississippi River, the original plant was built during World War II by the Reconstruction Finance Corporation as a part of its program to supply vitally needed aluminum for our war effort. As a bauxite sintering plant, it was erected to process material quarried in Arkansas. The facility was purchased by Ideal Cement Company in 1950. At that time structures and equipment included three raw mills, three kilns, three finish mills, eight slurry tanks, and two steel tanks for sinter storage.

Although no structural changes were necessary at acquisition by Ideal, a changeover to cement production required the installation of another finish mill, additional cement storage and packing facilities.*

Further conversion, undertaken in 1952, involved the addition of a fourth kiln and cooler and the construction of a 470-ft. dock equipped with a hammerhead crane for unloading incoming raw materials and barge loading of finished cement. The current project, which was also designed and carried out under the direction of Ideal's own engineering department, is a program of much greater scope than the conversion.

Raw materials for the process are brought in from separate sources. Oyster shell from Morgan City, La., is obtained from a dredging operator who delivers this material in barges

*Pit & Quarry, March, 1952, pp. 101-104.

←Two of these kilns were installed by Ideal subsequent to its acquisition of the plant. No. 5, left, was installed during the current expansion; No. 4 was installed in 1952.

to the company's Baton Rouge dock. Clay is obtained from the company's own pit located across the river west of Baton Rouge. Iron ore is received at the plant site in rail shipments.

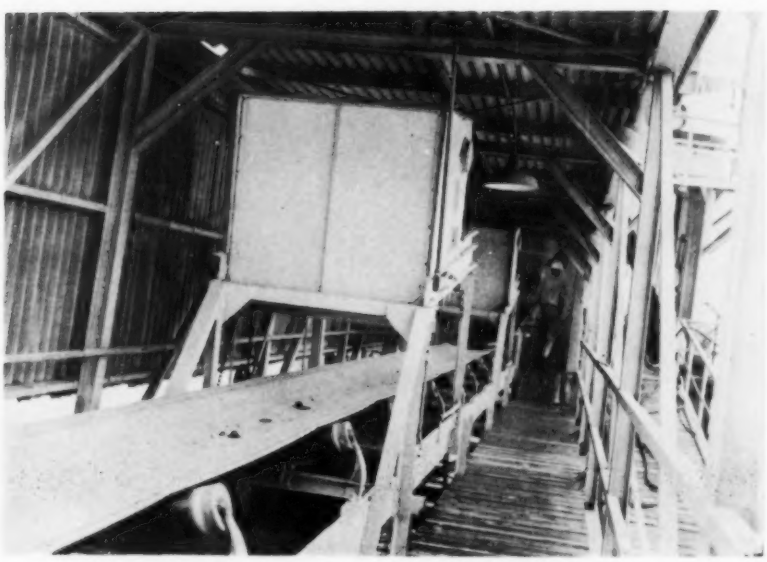
At the dock, incoming shell is unloaded from the barges by a Washington Iron Works hammerhead crane with a 90-ft. operating radius over the 360-degree rotation, and the capacity to handle material at the rate of 300 t.p.h. The crane's 6-cu. yd. Owens clamshell discharges into a hopper from which a Jeffrey 48- by 72-in. vibrating feeder transfers the shell to a 30-in. by 120-ft. belt conveyor. Mounted on the latter are a pair of Merrick Weightometers, both of which totalize the tonnage of material being transferred on the belt.

From this conveyor, the shell is discharged to a 30-in. belt on which the raw material is carried 890 ft. from the dock to the top and along the length of a conveyor gallery mounted on five concrete piers about 80 ft. high. With the piers on 80-ft. centers, the gallery is 320 ft. long, and the underlying shell storage pile to which the material is discharged by a Continental Gin tripper has a normal content of approximately 90,000 tons.

Bargeloads of incoming shell are unloaded by this hammerhead crane. With a 6-cu.yd. clamshell and a 90-ft. operating radius, the crane has a capacity of 300 tph.

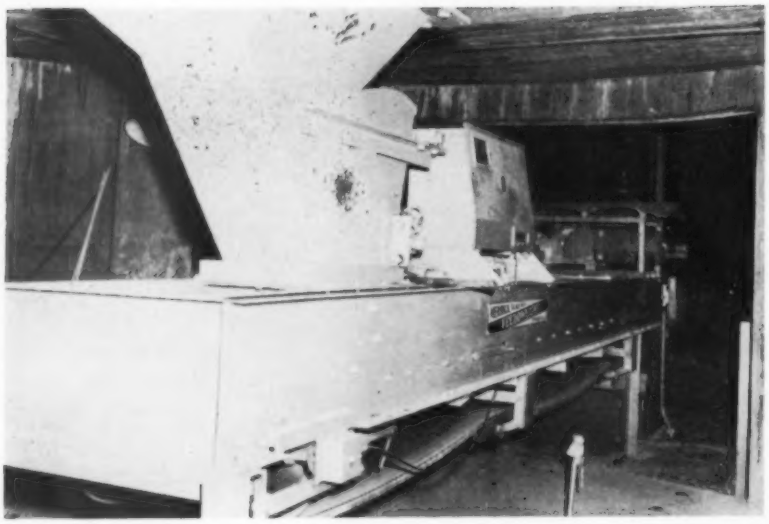
A reclaiming tunnel approximately 500 ft. long below the shell pile has nine draw points at each of which is installed a 24- by 48-in. Syntron vibrating feeder. The individual feeders have a feed range of from 40 to 80 t.p.h. and discharge onto a 24-in. belt that takes the shell into the crusher building. Here the raw material is discharged through a pants-leg chute to a pair of Dixie hammermills. These units are powered by 250-hp. G-E motors. The hammermill product is discharged onto a 24-in. by 300-ft. belt conveyor equipped with a Stephens-Adamson tripper for transportation to the four crushed-shell silos from which the raw mills are supplied.

to raise output 25% with new kiln, milling units



The tonnage of material transported on the dock conveyor is totalized by these two units.

At this point iron ore or other additives can be introduced into the process when it is desired. The new facilities for handling these additives were installed as a part of the recent expansion. These materials are dumped into a hopper below a rail spur near the crusher building. An 18- by 60-in. Jeffrey vibrating feeder transfers material from the hopper to a 24-in. belt conveyor on which the additive is carried to a pair of concrete storage silos that have a combined 900-ton storage capacity. Below the silos are a pair of Merrick Feedoweights. These units are under automatic electronic control from a Weightometer mounted with the conveyor belt on which shell



Each raw mill feed silo has one of these feeders to deliver crushed shell (or any additives) to the screw conveyors supplying the raw mills.

is delivered to the Dixie hammermills in the crusher building. Depending on the weight of shell recorded by the Weightometer as being delivered to the crushers, the Feedoweights deliver the desired amount of additive (within a range of 0 to 40 lb. per ton of shell) onto the conveyor carrying crushed shell to the raw mill shell silos. There is one silo for each mill.

Each raw mill silo has a capacity of 900-bbl. A 24-in. Feedoweight below each of three of the silos transfers crushed shell (and any additive) at the rate of 22 to 36 t.p.h. to the respective 15-in. screw feeder for each of the original mills. The Feedoweight for the new larger raw mill has a higher feed rate of 33 to 72 t.p.h.

At this stage the clay enters the processing flow, after undergoing its own initial preparation. This material, as trucked in from the company's clay pit, is dumped into a soaking pit at the site of a duplex clay mill located near the raw shell storage. A 2-cu. yd. Sauerman drag scraper, powered by a 40-hp. Louis Allis motor, is used to pull the clay from its storage, or soaking, pit to a pair of wash mills that are 24-ft. in diameter by 8-ft. in depth. Water is supplied to these units to achieve a 60 percent moisture content in the clay slip. The mill mixer arms, from which heavy lengths of chain are suspended, are driven by 60-hp. Allis-Chalmers motors.

A pair of Jeffrey elevators with 18-in. buckets raise the clay slip from the wash mill sumps to discharge over a 4- by 8-ft. Productive Equipment Company screen. The latter is fitted with a 4-mesh screen cloth and removes any debris contained in the clay as delivered from the pit. Material passing the screen is caught in a clay surge box and transferred from there to a large clay storage tank by either of two 6-in. model "C" 900-g.p.m. Wilfley pumps.

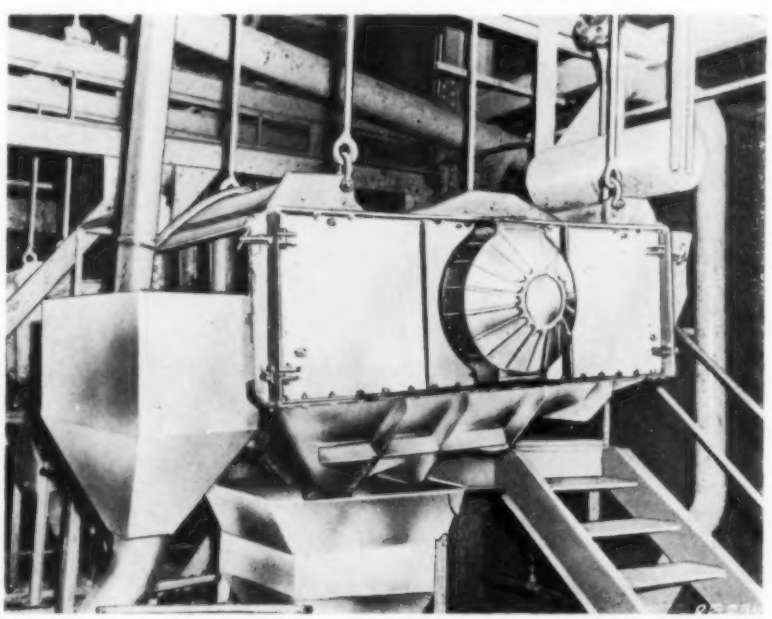
Beginning with the clay storage tank, the clay follows a circulating system. From the tank ,either of two 4-in. model "K" 200-g.p.m. Wilfley pumps delivers the material to the 36-in. ferris wheel clay feeder ahead of each of the four raw mills, and overflow from each of these feeders is then recirculated to the clay storage tank.

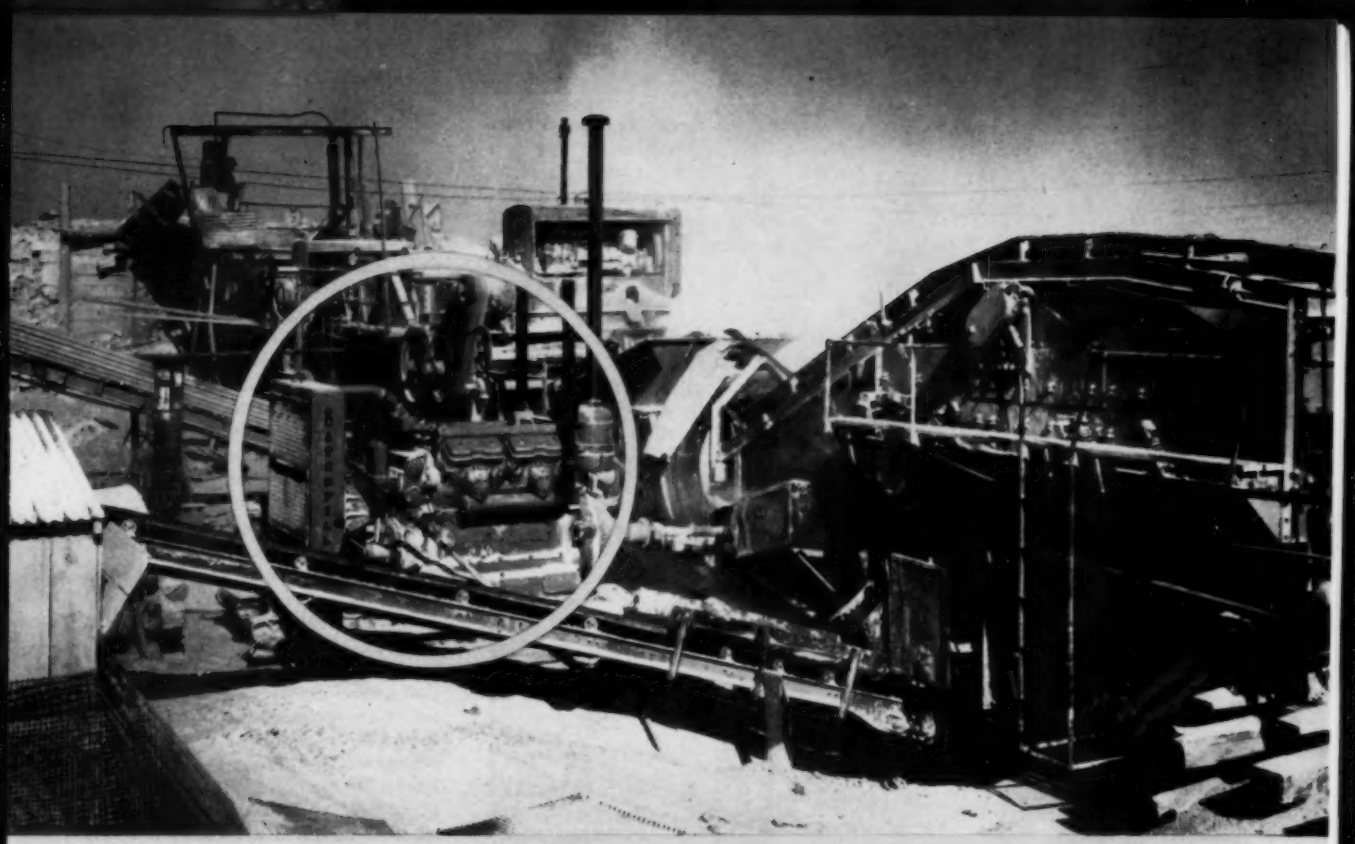
The three older F. L. Smidth ball mills in the raw mill department are 7- by 40-ft. 3-compartment units driven by 700-hp. Electric Machinery synchronous motors. The new 9½-by 32-ft. 2-compartment F. L. Smidth mill is equipped with a 1,250-hp. G-E motor and has a rated capacity of 160 bbl. per hour as opposed to 90 bbl. per hour from the older units.

Slurry discharged from each mill is transferred by a 414-g.p.m. 6-in. model "C" Wilfley pump to a 3- by 6-ft. Productive Equipment screen —one in each of the four separate ball mill circuits. Screen discharge is transferred by a pair of 600-g.p.m. 6-in. model "C" Wilfley pumps from the raw mill building to six steel storage and slurry blending tanks equipped with Dorr agitators. A battery of 800-g.p.m. 6-in. model "K" Wilfley pumps provide for transfer of slurry from each tank to any of the others to accomplish the desired blending, and from the blending tanks to the two new concrete kiln feed tanks. The latter are 50 ft. in diameter; each has an 8,000-bbl. capacity.

Slurry is pumped from the kiln feed tanks to the kiln building by 650-g.p.m. 5-in. model "K" Wilfley pumps and discharges into a 1,320-

One of the 3- by 6-ft. slurry screens to which raw mill discharge is fed.





120 TONS PER HOUR FOR ONLY 10¢ IN MAINTENANCE

This CAT* V-8 Diesel has cost only $2133 for repairs in 21,000 hours, including an overhaul after 20,000 hours. "Cat products, in our estimation, are the work horses in their field. They're easy to service and down time is less. We figure we've lost about four hours on our three Cat Engines in three years." Mr. E. B. Moubry, manager of the Aggregate Division of Standard Industries, Inc., and Lee Courtney, his superintendent, agree that this is the best performance one can expect. Standard Industries, Inc., of Tulsa, is a wholly-owned subsidiary of Tecon, Inc., Dallas, Texas.

This Cat, together with two smaller Caterpillar Engines, powers a Cedarapids portable crusher with an output of more than 1000 tons per nine-hour day of limestone and base materials. Thus repair costs have been only 10¢ per 120 tons produced. The two D13000s are veterans of 18,000 and 10,000 hours on the job.

This long and trouble-free work life is a Caterpillar tradition. The compact V-8 Cat retains new-engine efficiency over many thousands of hours, thanks to such Caterpillar features as foul-free fuel injection system, aluminum bearings and "Hi-Electro" hardened cylinder liners and crankshafts.

Efficient filtration is especially important in an engine that must work in dusty conditions in a pit or quarry. Years of research and development have gone into Caterpillar fuel and lubricating oil filters that keep out engine-wearing abrasive particles.

Leading manufacturers can supply Caterpillar Engines in their crushing and excavating equipment. And your Caterpillar Dealer can supply you with the rugged yellow diesel of your choice when it's time to repower. See him today for information on the full line of Caterpillar Diesel Engines up to 650 HP (maximum output capacity). He'll help you select the Caterpillar Engine that's built to do the most work over the longest period of time on *your* job.

Caterpillar Tractor Co., Peoria, Illinois, U. S. A.

CATERPILLAR*

*Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

MODERN
HEAVY-DUTY POWER

The expanded operation is under the general supervision of Harley Fleming, left, Ideal's southern regional production manager. W. S. Fogelberg, center, is plant manager, and W. E. Brown, right, is assistant plant manager.

bbl. overflow tank. The latter supplies a common header for five 3-in. model "C" Wilfley pumps, each of which is in separate circuit with a 36-in. ferris wheel feeder for the individual kilns. The three feeders for the original kilns are rated at 88 g.p.m., while those for the kiln added in 1952 and the new one installed during the current expansion are 94-g.p.m. units.

All five kilns are Traylor units—the older three are 9½- by 250-ft., while No. 4 (added in 1952) and No. 5 (new) are 10- by 250-ft. With drives supplied by 75- and 100-hp. G-E motors, the kilns turn at about 1 r.p.m. All kilns are equipped with spiral chain sections.

American Blower fans at the feed end of each kiln (75,000 c.f.m. for the three smaller kilns and 100,000 c.f.m. for the two larger kilns) provide induced draft. The fans are driven by 100-hp. and 125-hp. G-E motors, respectively. Exhaust gases are passed through the wet scrubbers that were erected as a part of the original sintering plant.

With natural gas as the fuel, calcining temperatures for all kilns are maintained at about 2,700 deg. F. Exit gas temperature is about 450 deg. F. Kilns No. 1 to 4 have a common control panel that was a part of the original plant but which has had a revision and expansion in instrumentation. The control panel for the new kiln is a Leeds and Northrup installation.

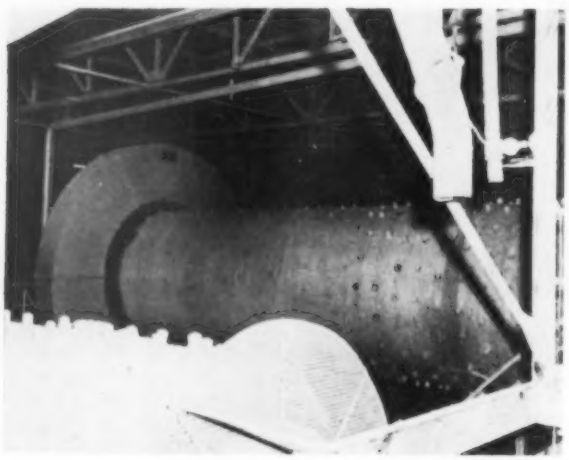
Kiln operation is highly instrumented; it includes front and back and temperature recorders; hood, kiln differential, and cooler draft gauges; feeder controls; gas flow recorders; and flue gas analyzers (CO_2 recorders on kilns 1, 2 and 3, and O_2 recorders on kilns 4 and 5).

Clinker discharges from the kilns into 4-ft. 6-in. by 60-ft. Allis-Chalmers air quenching grate coolers, each of which is driven by a 15-hp. Allis-Chalmers motor. Preheated primary air for each kiln is forced through the respective coolers by 57,000-c.f.m. American Blower fans driven by 50-hp. G-E motors. Fans of the same manufacture provide 24,425 c.f.m. (kilns 1, 2 and 3) and 37,300 c.f.m. (kilns 4 and 5) of air for Buell cyclone type AC 130 dust collectors that draw from each clinker cooler.

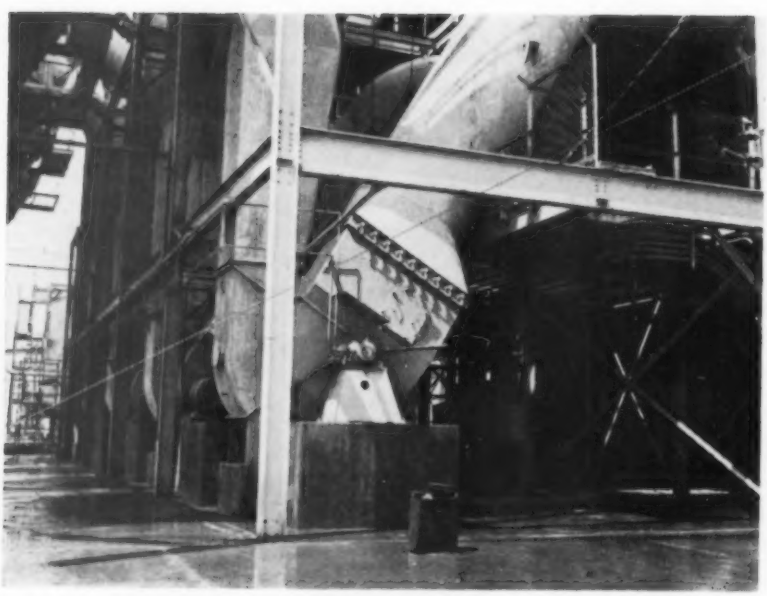
All coolers discharge to a common drag conveyor which in turn feeds the clinker into the boot of an 18-in. Jeffrey bucket elevator. Dual drags and elevators provide stand-by units. At this point the material may follow either of two routes—directly to the finish mill feed bins, or to a group of four concrete storage bins, each having a capacity of about 10,300 bbl.

In the latter procedure the clinker is transported via bucket elevator and a Carrier vibrating conveyor to the bins. One of these bins will be utilized for raw dried shell in producing masonry cement. An 8½- by 60-ft. dryer will be installed to dry the shell. From the bins, vibrating feeders transfer the clinker, or dried shell, to a belt conveyor on which it is carried to the 24-in. by 230-ft. conveyor that transports clinker directly from the clinker elevator tower to the finish mill department.

By means of a Link-Belt tripper, the clinker from the coolers or storage bins is distributed to the five mill feed bins—three of 5,327-bbl. and



This 9½- by 32-ft. 2-compartment mill was recently added to the raw milling operation. Rated capacity of the new unit is 160 bbl. per hour.



An induced draft of 75,000 c.f.m. is provided for each of the three smaller kilns by three of these fans; others furnish 100,000 c.f.m. for the two newer kilns.

two of 6,497-bbl. capacity. From each bin a Merrick Feedoweight and a 24-in. Continental Gin belt conveyor transfer the clinker to the respective ball mill. Gypsum is introduced into the process from two 1,306-ton capacity concrete bins. Two Feedoweights below one bin supply this material to mills No. 1 and 2, and three of the same type of feeders supply the remaining three mills from the other gypsum bin.

The three Traylor mills that were in the plant when it was acquired by Ideal are 8- by 16-ft. units, each with a capacity of 57 bbl. per hour and driven by 450-hp. Electric Machinery motors. The mill, which was installed shortly after the plant was purchased, is 9½ by 16 ft., has an 800-hp. G-E motor, and an 83-bbl. per hour capacity. The new mill, also a Traylor, is an 11½- by 18-ft. unit with a 1,250-hp. G-E motor and an hourly capacity of 130 bbl.

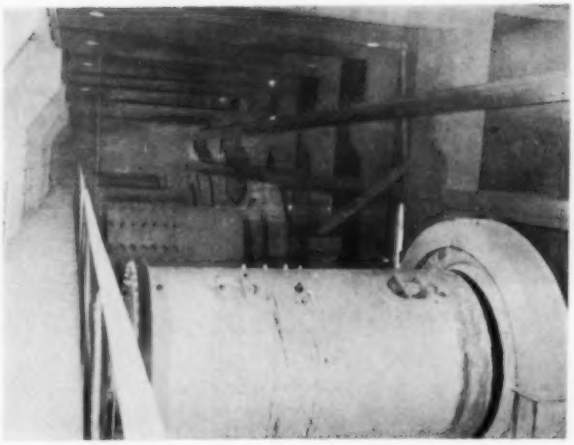
From each finish mill the product is fed to a 14-in. Fuller-Huron Airslide that discharges into the boot of a Jeffrey bucket elevator. The five elevators in turn transfer the material to 14-in. Airslides that feed the five Sturtevant separators. Separators 14 ft. in diameter are used with the 8- by 16-ft. mills, while 16-ft. units were installed in circuits with the newer finish mills.

Finished product from the separators is fed to a Fuller-Kinyon pump, while the rejects are returned to the respective finish mills *via* 12-in. Airslides. In each milling circuit the Airslides are supplied with air by a 5-hp. 3,460 r.p.m. Buffalo blower. Dust collection from the feeding and conveying equipment, Airslides, elevators, and separators in each circuit is handled by a Norblo bag type dust arrestor. In the three older circuits the 8½- by 20-ft. dust units are supplied with 9,500 c.f.m. of air by 1,800-r.p.m. Norblo fans. The newer and larger units are 8½ by 25 ft. in size with 11,000 c.f.m. of air supplied by 1,170-r.p.m. fans.

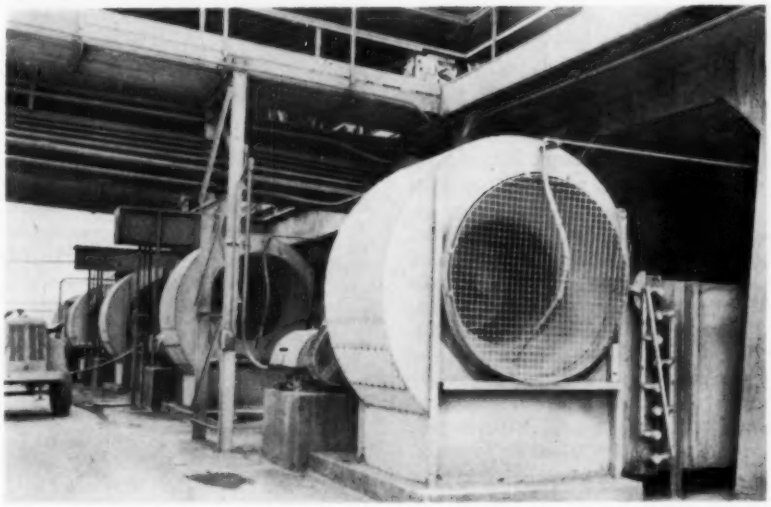
Transfer of cement from the finish mill department to the storage and packing facilities is handled by a pair of 9-in. Fuller-Kinyon pumps (one a stand-by unit). These are supplied with compressed air by three Fuller-Kinyon compressors—two C-150, and one C-250, driven by 100- and 200-hp. motors, respectively. The cement is pumped through a 10-in. line about 1,100 ft. from the finish mill building to the two groups of storage silos.

The older of these two groups is comprised of six 35- by 75-ft. con-

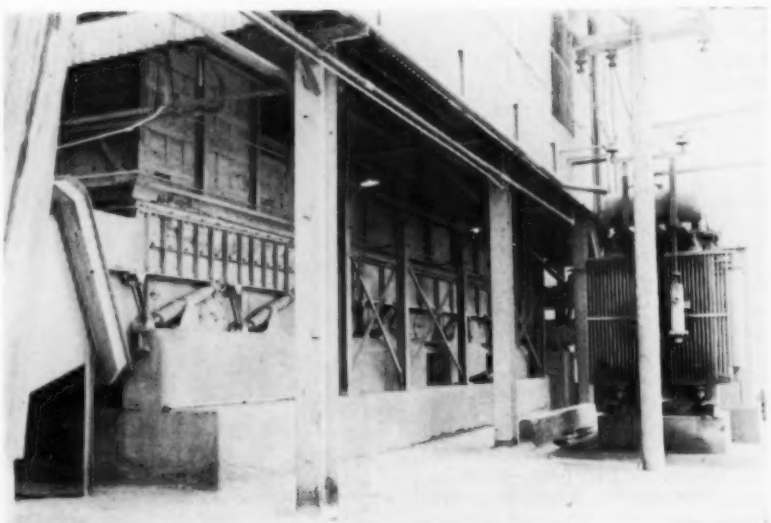
(*Continued on page* 77)



The interior of the finish milling department. A new mill, an 11½- by 18-ft. unit, was added during the recent expansion.



These 57,000-c.f.m. blowers furnish the kilns with primary air which is pre-heated by being drawn through the clinker coolers.



A view of one of the five air-quenching grate clinker coolers. Each is a 4-ft. 6-in. by 60-ft. unit.

CANADIAN INSTITUTE OF MINING AND METALLURGY MEETS IN QUEBEC

Another ON THE SPOT Report

THE 58th annual general meeting of the Canadian Institute of Mining and Metallurgy was held in the Chateau Frontenac Hotel, Quebec City, on April 9, 10, and 11. Nearly 1,200 delegates were in attendance, and many were accompanied by their wives. The committee in charge of arrangements, headed by I. W. Jones, were the recipients of many well-deserved compliments on the excellence of arrangements for the technical sessions and for the social events.

The first major event was the Welcoming Luncheon at which His Worship, the mayor of Quebec City, and W. N. Cottingham, Minister of Mines of Quebec, were the speakers.

Following the luncheon the inaugural general session was held, with President A. L. Penhale and Colonel D. H. McDougall, chairman of the executive committee of council, presiding. At this session a symposium was held on the subject *The Mineral Industry as It Is Affected by Transportation*. Those taking part included leaders in air, water, rail, and road transportation in Canada.

On Monday evening an excellent variety show was presented in the ballroom, followed by a reception and dancing.

The technical sessions of the various divisions were held on Tuesday and Wednesday, and the annual dinner of the Institute was held on Tuesday evening. The president's reception and the annual dance were held on Wednesday evening.

On Thursday tours were arranged to the Citadel Brick Company's plant, and to the new plant of the St. Lawrence Cement Company on the outskirts of the city.

At the Institute luncheon on Wednesday the president, A. L. Penhale, delivered his presidential address and inducted the incoming president, John F. Walker, Deputy Minister of Mines for British Columbia.

The guest speakers at the annual dinner were Cyrus S. Eaton, chairman of the board, Chesapeake and Ohio Railway, and the Honorable Maurice L. Duplessis, Premier of Quebec.

V. A. Haw of the Mines Branch, Ottawa, presided over the business meeting of the Industrial Minerals Division. At the conclusion of the meeting he introduced the incoming chairman, W. A. Hood, manager of the Building Products Ltd. plant at Havelock, Ont. A number of members of the Industrial Minerals Division of the American Institute of Mining, Metallurgical and Petroleum Engineers including R. B. Ladoo, chairman, were welcomed.

A. L. Penhale, immediate past president of the Canadian Institute of Mining and Metallurgy.

J. F. Walker, Deputy Minister of Mines, B.C., incoming president.

Among the papers presented of particular interest to producers of industrial minerals were the following:

Cellular Concretes by M. R. Scriven, Siporex Limited, Montreal, dealt with the manufacture and use of cellular concrete products, which, though comparatively new to Canada, have been under development for from 25 to 30 years in Europe. They combine low thermal conductivity, low shrinkage, and high resistance to fire and frost with lightness (25 to 50 lb. per cu. ft.) and strength. They are produced mainly by two methods which involve (1) *mechanical expansion* during the mixing period, and (2) *chemical expansion* subsequent to mixing and placing.

The mechanical expansion method involves incorporating a foam having high surface tension into the batch during the mixing operation. The foam may be prepared separately and injected into the batch (pre-foaming) or it may be generated by the addition of a foaming agent to the mix, followed by agitating rapidly in a high-speed, beater-type mixer (entraining). Lower densities are normally obtained by pre-foaming than by entraining. As expansion takes place prior to pouring, this method is well suited to poured-in-place as well as to precast applications.

The chemical expansion method is used to produce the highly stable, low-density, high strength-weight ratio cellular concretes. In the type produced in eastern Canada a clean concrete sand of high-silica content is wet-ground to the fineness of portland cement and is agitated continuously. Definite amounts of portland cement, aluminum powder, and certain chemicals are added to a definite volume of the sand-water slurry. The batch is discharged to a mixer and thoroughly mixed for a given period.

The mixture is then discharged into molds. Expansion, due to the reaction between the aluminum powder and the free lime of the cement, begins immediately after the material is in the molds and it is substantially complete in 30 minutes. By this time the mold is filled to excess. The expanded material is left

undisturbed for 8 to 10 hours. Now it has set to the consistency of cheese. The excess material is scraped off the top, and the sides and ends of the mold are removed.

Taut piano wires are used to cut the "cake" into units of pre-determined dimensions. The sides and ends of the mold are replaced, and the mold and cake are placed in an autoclave and kept in an atmosphere of wet steam at 150 p.s.i. and 350 deg. F. for 24 hours. After the block has been removed from the molds, the material is ready for use and has a minimum crushing strength of 150 p.s.i. The capacity of each mold is 60 cu. yd. of products per day.

To illustrate the properties of the cellular concrete — a simple 6-in. wall composed of it has a coefficient of heat transmission equivalent to that of a 17-in. wall constructed of 4 in. of brick, 12 in. of lightweight concrete block, and incorporating two air spaces.

The demand for this concrete is increasing rapidly, as demonstrated by the fact that the one producer in eastern Canada—Siporex Limited, a subsidiary of Dominion Tar and Chemical Co. — has increased its plant capacity threefold in the first year of operation in order to meet the increasing demand.

Following presenting his paper, Mr. Scriven showed two motion pictures illustrating the manufacture and use of Siporex cellular concrete.

In his paper *The Relocation Project at Thetford Mines, Quebec,* Leigh W. Bladon, manager, Relocations Limited, Thetford Mines, described the problems encountered and their solutions in the task of removing and relocating a railway, a trunk highway, waterworks, buildings, and power and telephone lines from a large area in the vicinity of the great open pits of Asbestos Corporation Limited, Bell Asbestos Mines Limited, and Johnson's Company Limited at Thetford Mines. This relocation project was rendered necessary when it was found, as the pits were extended, that much high-grade asbestos-bearing rock underlay the area that had buildings on it. The cost of the operation was borne by the three abovementioned companies in proportion to the tonnage of asbestos-bearing rock made available.

Pyrolysis of Chrysotile Asbestos Fiber by H. M. Woodrooffe, Industrial Minerals Division, Mines Branch, Ottawa, gave the results of the speaker's studies on the water of combination of asbestos. Peculiarities were noted which are related in part to chemical composition and in part to physical properties. These properties have a bearing on the uses of asbestos. The study showed that during heating, water is lost in three stages from the fiber. One of these stages requires only a relatively low temperature. This is a matter of interest in the drying of the fiber during milling.

M. S. Badollet and M. R. Ximenez of Johns-Manville Research Center, Manville, N. J., presented a paper entitled *The Role of Asbestos in Plastics,* in which the use of asbestos as a filler in plastics was reviewed from the standpoint of its use in cold-molded, thermoplastic, and thermosetting products. The advantages and disadvantages of chrysotile were discussed, as well as the general methods of compounding the fillers with the resins. Grades of asbestos especially suited to this use have been developed within the last few years, and close cooperation is maintained between the mine and the plastic manufacturer to insure that variations in quality are kept within narrow limits.

Of interest to operators engaged in the underground mining of limestone and other industrial minerals was the paper on *Rock Bolting in the Voussoir Beam* by A. V. Corlett of Algoma Ore Properties, Sault Ste. Marie, Ont. He stated that the use of rock bolts to reinforce rocks surrounding openings in Canadian mines has increased rapidly since 1950. Most of the bolts used are 5 to 8 ft. long and 1 in. in diameter. A bolt is installed by anchoring it firmly at the end of a hole drilled a little larger in diameter than the bolt and of nearly its exact length to permit the anchorage to be effective. The bolt is tightened, by a nut over a washer against the rock face, to about one-half of its full strength. It is thus stretched and acts like a spring.

These bolts are installed in a regular pattern which has been found satisfactory for the type of rock being reinforced. The effectiveness of rock bolting is demonstrated in the mines where it is used by the fact that there has been a decrease of injuries caused by falls of rock. This is due partly to the installation of bolts and partly to the increased attention given to the rock before and after the bolts were installed.

At present, lithium minerals and their processing are the subject of a great deal of interest and also of speculation. R. A. Wyman, flotation engineer in the Industrial Minerals Division, Mines Branch, Ottawa, in his paper *Laboratory Investigation of Spodumene Flotation* discussed the results he had obtained in flotation tests on four samples from Ontario and Manitoba. He stated that in his experience flotation of gangue from spodumene is more practical than flotation of spodumene from gangue. The more effective reagents were described; and the general conditions as to fineness of feed, amount of reagent used, and results obtained were given.

Ideal's Expansion

(*From page* 75)

crete silos and two interstice bins, which provide a total storage capacity of approximately 125,000 bbl. of cement. With conventional conveying and cement-pumping equipment, this group, which was erected shortly after Ideal converted the operation to cement production in 1951, supplies a battery of three 4-tube type 107-FC St. Regis units for bagged output; it feeds loading points for railroad bulk shipments; and it also supplies the loading dock at the river through a 12-in. line for barge shipment. Cement is pumped about 1,000 ft. through the latter line at about 1,000 bbl. per hour by a 10-in. Fuller-Kinyon pump for which three Fuller C-250, 1,364 c.f.m. compressors are provided.

The newer group of storage silos, erected during the current expansion program, is comprised of 15 silos and 8 interstice bins, accommodating over 152,000 bbl.

Although no bagging is done from the new storage silos, this group is also used for supplying bulk rail shipments, and for feeding the barge-loading point on the dock through the same 12-in. line mentioned in connection with the older silos. Dust collection from the new group is handled by three model D-54-16 Aeroturn units with 4,800-c.f.m. American Blower Corporation fans. Two Norblo 156-A Dust Arrestors with 3,744-c.f.m. fans are installed above the older silos for dust collection from the storage areas and elevators, while No. 200 units with 6,700-c.f.m. fans handle dust collection from the packers.

This newly expanded operation, which is expected to produce an average of 7,800 bbl. daily, is under the general supervision of Harley Fleming, southern regional production manager, W. S. Fogelberg, plant manager, and W. E. Brown, assistant plant manager.

SILO FILL POSITION MEASUREMENT, GRANULATED BLAST-FURNACE SLAG DISCUSSED IN GERMAN JOURNALS

Reviewed by
B. M. PEARSON

IN A PAPER entitled *Bunker and Silo Fill-Position Measurement by Radioactive Isotopes** it is stated that radioactive isotopes in conjunction with a Geiger counter can be used to control the filling height in closed containers such as silos. This measuring process, which has been used with satisfactory results for some years, particularly in the plastics industry; and it is considered that it could also find application in the cement industry for ground materials such as raw meal, cement, and coal. For fill-position measurements isotopes are suitable which send out gamma rays. The radiation must possess the same electromagnetic wave characteristics as X-rays, so that this radiation will also be capable, for example, of penetrating through a 20 mm.-(7/8-in.) thick steel plate.

A fill-position measurement with gamma rays by means of a Geiger-Mueller counter tube is based essentially on an intensity measurement of these rays after passing through the steel plate shell of the silo. This counter consists of a hollow metallic cylinder and a fine wire stressed along its axis between which there is placed a voltage of about 1,000 volts. The tube is filled with a mixture of inert gas and usually an organic addition gas. The gamma rays which impinge on the tube release electrons in the wall or the gas, which, accelerated by the electrical field between the anode (wire) and the cathode (cylinder), ionize the gas molecules and set free an electronic cascade. This creates a current impulse which is passed to a measuring amplifier. The indicating instrument shows the timely average value of the gamma radiation. With self-extinction tubes, by a special addition to the counter-tube gas, the possibility of the electron cascade leading to a glow discharge is avoided. With non-self-extinction tubes, on the other hand, special switching means are necessary. Self-extinction tubes can register up to 10^5 impulses, non-self-extinction on the other hand only up to 10^3 impulses. Two new counters, the crystal counter and the scintillating counter, similarly permit of measuring gamma radiation.

A fill-position measurement with gamma rays and Geiger counter tubes can be used both for maintaining constant the filling height in a container and for measuring any given filling height. In the first case a simple regulating circuit can be constructed with radiation intensity as the measuring dimension, which from time to time switches the actuating mechanism of the bunker feed gear on or off.

With an indication of the filling height the isotope preparation and the counter tube must mutually move up and down, and in this way the counter tube will control the driving motor through its indication in such a manner that the counter tube and preparation follow the surface of the material in the bunker.

Finally, mention is made of the possibility of making the fill-position measurement without moving parts. In this case, the radiation strength of a fixed counter is used. This method is less accurate and operates only in a range of 4 meters (12 ft.) filling height difference. The radioactive isotopes to be used for the cement industry must, however, possess a higher radiation than those which have been used for determining the filling height of liquids. In filling a silo with raw meal, cement, or coal, a dust-air mixture is formed, in the space above the bunker contents, which weakens the radiation of the preparation. When the silo is being charged with granular material, the existing angle of rest scarcely influences the result of the indicator.

With the use of radioactive isotopes, special attention must be given to radiation protection. If one uses the gamma radiation of preparations with a large half-life value, as for example radium, so that the preparation requires no attention, these difficulties can be obviated by placing the preparation in the interior of the bunker. The contents and the silo wall would absorb so much radiation that a radiation protection outside would not be necessary. With the use of radium as the radiator the costs for the preparation are appreciably high. In order to assure that the relay will operate with certainty at the fill-position limits set for the silo, additional spot radiators are placed at these points so that a multiple of the radiation intensity occurs there.

Russian tests made on the use of granulated blast-furnace slag as a raw material in the cement slurry process are described in a paper on *Granulated Blast Furnace Slag in Cement Slurry.*** In spite of general experience up to the present indicating that blast furnace slag stiffens the slurry and tends to bind it, now tests were made with the utilization of certain additions which had the object of preventing this binding tendency and of reducing the water requirements of the slurry.

As with large-scale tests it was shown that the water content of slurry could be held lower. It was continuously circulated by pumping, as a precautionary measure. In this way it attained a liter weight up to 1750 gm. The material burned more easily than with the use of clay and with a lower heat consumption. With a rotary kiln of 3 to 3.6 by 70 meters long, a slurry of this type was conditioned with only 25 percent of water, and kiln output rose from the former figure of 360 to 375 t.p.d up to 455 t.p.d.

With a smaller kiln of 2.5 by 60 meters the feed coating grew and ring formation took place after 4 days. With a 150-meter rotary kiln with a previous output figure of 620 t.p.d. the daily output of the kiln rose to 720 tons as a result of the introduction of 19 percent blast-furnace slag in the raw slurry instead of clay, and the consequent resultant reduction of the water content from 40 to 30 percent. Naturally some difficulties also occurred with raw-materials grinding as blast-furnace slag is more difficult to mill than clay components otherwise used.

*Fendler, H.—*zeit. Vereins Deutsch. Ing.*, Vol. 96 (1954), p. 389.

**Wainstein, J.—*Silikattechnik*, Vol. 4, p. 324.

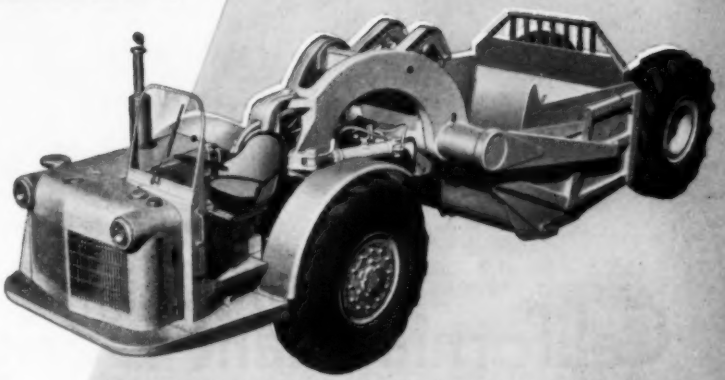
5 "Euc" SCRAPERS . . . 7 to 18 yds. struck

MORE WORK-ABILITY... BETTER ACCESSIBILITY

Ease of operation and maintenance and production performance have made Euclid the fastest selling scraper line in the industry. Advanced design of Euclid's hydraulic lever action provides fast, positive and independent control of bowl, apron and ejector . . . downtime and expense of cable replacement is eliminated. The low, wide scraper bowl, with adjustable 4-section cutting blade, assures fast, easy loading in any material. All major components in every Euclid scraper are readily accessible . . . another reason why ***Euclids are your best investment.***

EUCLID DIVISION, General Motors, Cleveland 17, Ohio

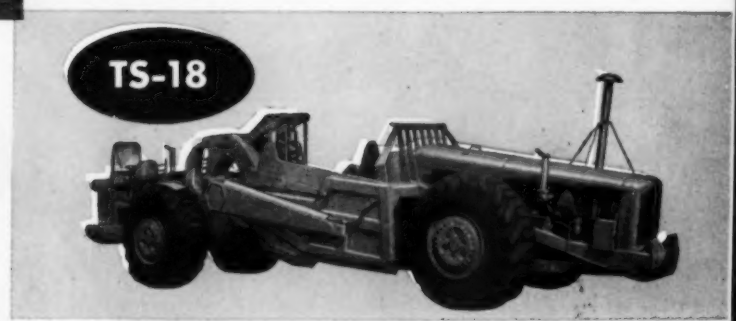
S-7
S-12
S-18



These overhung engine models have struck capacities of 7, 12 and 18 yds. . . . are powered by 143, 218 and 300 h.p. engines. The S-7 and S-12 have 5 speed transmissions . . . S-18 has 300 h.p. engine and Torqmatic Drive. With full power steering, these scrapers are easy to operate . . have exceptionally good maneuverability.

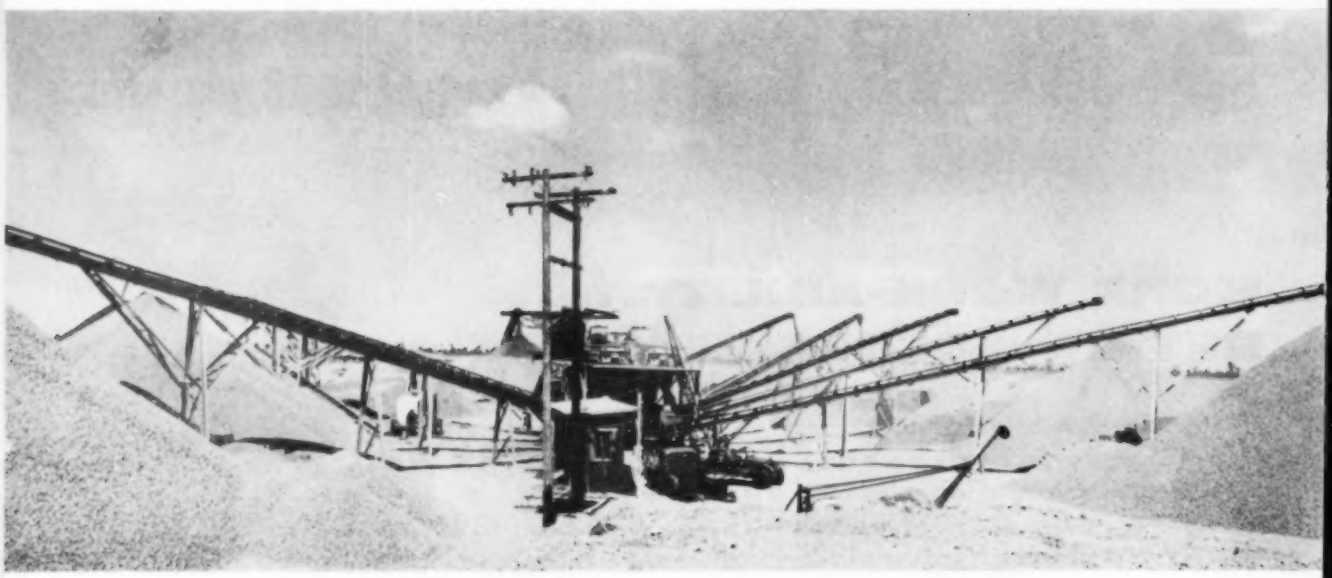
15½ yard Scraper has a 4-wheel tractor for maximum stability on long hauls at fast travel speed. It is powered by a 300 h.p. engine with either a 10-speed transmission or Torqmatic Drive. Heaped capacity at 3:1 slope is 18 yds. . . . 21 yds. at 1:1 slope. Drive and scraper tires are 24.00 x 25 with 29.5 x 25 optional.

TS-18 is the newest Euclid Twin-Power Scraper. A one-man earth-moving outfit, it has tremendous power and traction . . . self loads and can work on steep grades and the toughest jobs. Powered by two 218 h.p. engines, each driving through separate Torqmatic Drives. Tractor is available with 300 h.p. engine for work where even more power is needed. Tires are 27.00 x 33 with 33.50 x 33 optional. Heaped capacity at 3:1 slope is 21 yds. and 25 yds. at 1:1. The TS-18 has set new standards of scraper production and low cost yardage.



Euclid Equipment

FOR MOVING EARTH, ROCK, COAL AND ORE



A plant view of new aggregates plant of Terminal Rock & Sand Co., Littlerock, Calif.

California Plant Designed For Shallow River Deposit

By HARRY F. UTLEY

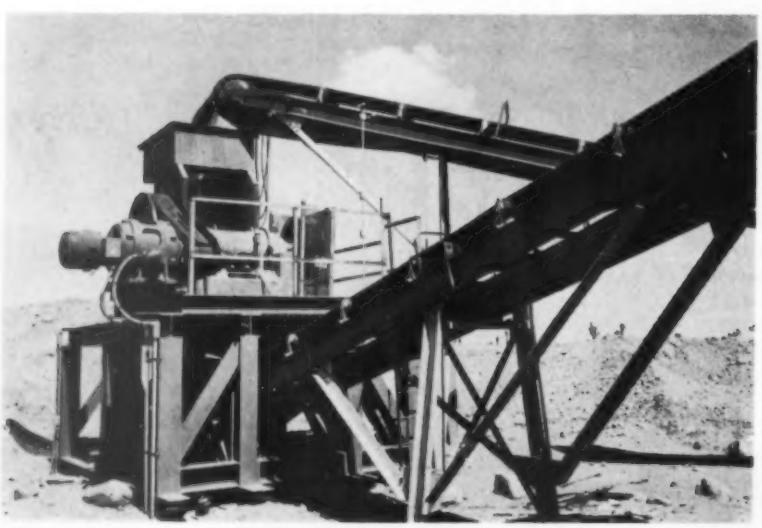
Another ON THE SPOT Report

RAY R. BROYLES and John K. Larson, operating as Terminal Rock & Sand, began producing aggregates in January, 1956, from a new plant at Littlerock, Calif., in the booming Antelope Valley, northeast of Los Angeles. Designed by Arthur E. Howland, Los Angeles structural engineer, in cooperation with Brown-Bevis Industrial Equipment Company of Los Angeles, the new all-steel plant has a capacity of about 300 t.p.h.

Located on the flat bed of an ancient river, the deposit of 140 acres contains clean and well-balanced material to a fairly uniform depth of about 25 ft. The plant was designed so that the field hopper, conveyors, and primary crusher can be moved to accommodate excavating operations on the relatively shallow deposit. The economies of ground storage were utilized to the fullest extent to eliminate rehandling of surplus finished material. Since nine separate products are stored, a like number of stockpiling conveyors are required to stack these into piles, all radiating from the processing equipment in the center.

There are 15 separate conveyors in the entire plant, each equipped with a Yuba-Schrock motorized head pulley. These units range from 30 to 18 in. in diameter and from 30 to 5 hp. With this type of internal-drive pulley, no sprockets, chains, or belts are required. The pulley shell rotates around the electric motor and reduction gears which are encased within the shell.

At present pit-run material is simply dozed to the 40-ton-capacity



The movable, skid-mounted primary jaw crusher can be shifted, along with the field hopper, as excavation progresses in the pit.

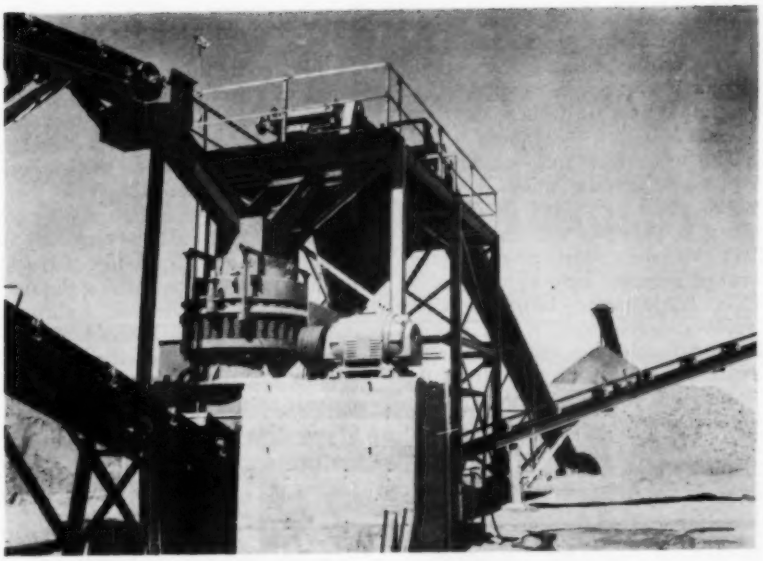
Field Hopper, Conveyors, Primary Crusher Can Be Moved as Excavating Progresses

movable field hopper by two Caterpillar D8 tractors. A Syntron grizzly-feeder beneath the hopper ribbons the material onto a 30-in. by 101-ft. belt conveyor running to a skid-mounted Pioneer 15- by 36-in. 50-hp. jaw primary crusher. A 30-in. by 140-ft. inclined conveyor following picks up the minus 3-in. crushed and by-passed gravel and sand to build a surge pile of 4,000 tons live capacity. It is thus possible to heap sufficient material in the pile to supply the plant for about two days' running in the event of a shutdown in the pit for repairs, or to move the field hopper and primary crusher to new stations as excavating progresses.

Reclamation from the surge pile is by a tunnel belt which delivers to a 4- by 16-ft. Symons 2-deck primary screen. This screen is mounted on a low tower about midway between the surge pile and the final processing structure. While this type of screen is designed for horizontal mounting, it was sloped 4 degrees in this instance to speed up the take-out to match the final screening output. Besides scalping off the plus 1½-in. rock, which is chuted to a Symons 4-ft. 100 hp. cone crusher alongside, the screen also takes out some of the excess dry sand, which is separately stockpiled by a stacker belt for asphalt-plant and other ultimate uses. The remainder is washed and sized.

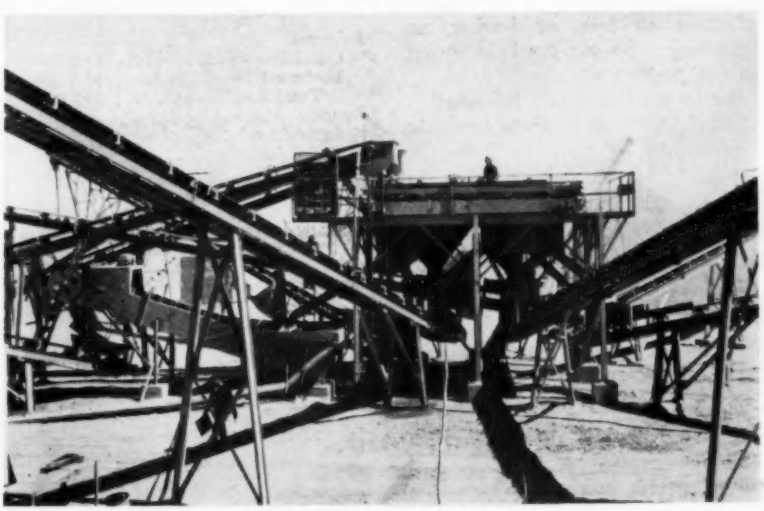
A pair of belt conveyors separately carry the crushed and uncrushed material to two Symons 4- by 16-ft. 2½-deck horizontal screens, one of which sizes the crushed product; the other screen washes and sizes the natural gravel and sand.

The crushed-material screen operates dry and is in closed circuit with the cone crusher. Acceptable sizes of minus ¾-in. gravel is classified into four products, each of which



The primary scalping screen and secondary cone crusher. The conveyor leading off right stockpiles surplus dry sand taken out by the screen.

Conveyors feeding the dry crushed (left) and washed natural gravel sizing screens.



Sizing screens and feed chutes to stockpiling conveyors. At the left is the screw classifier for sand.

is stockpiled by a conveyor on the north side of the plant. These 100 percent crushed products are: minus ¾ plus ½ in.; minus ½ plus ⅜ in.; minus ⅜ plus 3/16 in.; and dust (minus 3/16).

The wet screen spray-washes and sizes three gravels: minus 1½ plus ¾ in.; minus ¾ plus ⅜ in.; and minus ⅜ plus No. 4 mesh. Bottom-deck throughs are processed for washed concrete sand by a 36-in. by 25-ft. Eagle screw classifier. Minus No. 4 concrete sand is the normal product, and when plaster sand is desired, the lower-deck cloth on the wet screen is changed to obtain a smaller top-size particle.

Four stacker conveyors handle the washed products in a manner similar to the crushed material, except that the washed sand and gravel is stockpiled on the south side of the plant.

Initially, finished materials are being loaded from the piles into delivery trucks. However, the piles are arranged in line over 8-ft. diameter tunnels—225 ft. long on the washed-aggregate side, and 285 ft. long on the crushed-product side. Later on, reclaiming belts will be installed in these tunnels to fill a series of truck-loading bins, also permitting the sizes to be blended if desired. Industrial Asphalt, Inc., Los Angeles, is now erecting a hot plant on the Terminal property and this installation will provide an important outlet for much of the crushed material being produced.

The conveyors were fabricated for Brown-Bevis-Industrial on subcontract by the Hurt Conveyor Company of Los Angeles, utilizing Cedarapids troughing rolls and idlers. Wash-water requirements of about 200 g.p.m. are supplied by a Johnston 40 hp. pump. The 12-in. well casing was put down 400 ft., and water is currently encountered at 180 ft. Although the operation is in a semi-arid region of sparse rainfall and despite a recent major influx of population and industries, chiefly aircraft, which poses a threat to the water table, it is believed that the 400-ft. well will assure an adequate supply for the plant for many years.

A 70-ft. Webb truck-scale weighs out shipments, all of which go by motor truck. The company operates a small fleet of its own International semi-trailers for deliveries.

National Safety Council Launches One-Year Drive Against Accidental Falls

Injury by accidental falls will be the target of a nationwide campaign to be launched on September 1 by the National Safety Council. According to the council's records, more than 19,000 persons were killed by falls last year in the United States; and at least 450,000 workers are temporarily or permanently disabled annually by accidental falls.

Any company is eligible to participate in the campaign, which will run from September 1 to August 31, 1957. The goal is a 50 percent reduction in injuries and deaths due cil will make available a series of 13 posters and three large banners. Films, flip charts, illustrated booklets, five-minute safety talks, and safety instruction cards may also be obtained. A "Certificate of Achievement" will be awarded to each plant achieving the goal of a 50 percent reduction in falls or having no chargeable injuries from falls during the campaign year.

For materials and information concerning the campaign, apply to the National Safety Council, 425 N. Michigan Avenue, Chicago 11, Ill.

Plans for $20 Million Plant Of Universal Atlas Okayed

Mayor John C. Jaworski, Lorain, Ohio, has stated that some of the problems delaying location of a new $20,000,000 cement plant in that city by the Universal Atlas Cement Company have been solved. Top New York officials of the firm met with the city council to discuss last minute details holding up construction, Mr. Jaworski indicated.

Five company requirements have been under study by the city since May 21. They include approval of the company's plan for access roads, establishment of a new dock line in the Black River Turning Basin, a change in zoning on a part of the proposed site of the plant, consent to connect with the city water and sewer systems, and approval of a pumping station to draw water from the Black River.

International Conference Of Diamond Drillers Held

An International Diamond Drilling Conference, sponsored by the Canadian Diamond Drilling Association, was held on May 31, June 1-2, at the Royal York Hotel, Toronto, Canada.

In conjunction with this conference, the 13th annual convention of the Canadian Diamond Drilling Assn. and the spring meeting of the Diamond Core Drill Mfrs. Assn. (U.S.A.) were also held.

February Lime Sales Lag—March Shows Increase

Domestic sales of open-market lime in February, 1956 — 762,965 short tons — decreased slightly from January sales, according to reports by producers to the U. S. Bureau of Mines. Sales of agricultural and building lime increased; whereas a slight decrease was noted in refractory, chemical, and other industrial uses.

March sales—72,164 short tons—increased slightly from sales of the previous month. Increases were noted in all the major categories.

The accompanying table shows sales by types and major uses.

Lime Sold by Producers[1] in the United States, in Specified Periods of 1955-56, by Types and Major Uses, in Short Tons

	February	March		January-March	
	1956	1956	1955	1956	1955
By types:					
Quicklime	612,684	630,343	591,126	1,871,159	1,653,989
Hydrated lime	150,281	161,821	169,726	452,385	423,158
Total lime[2]	762,965	792,164	760,852	2,323,544	2,077,147
By uses:					
Agricultural:					
Quicklime	2,494	4,009	3,837	10,784	9,918
Hydrated lime	12,100	15,596	17,337	34,391	33,187
Total	14,594	19,605	21,174	45,175	43,105
Building:					
Quicklime	11,891	14,534	16,893	39,634	64,174
Hydrated lime	69,481	78,470	85,335	213,650	206,206
Total	81,372	93,004	102,228	253,284	270,380
Chemical and other industrial:					
Quicklime	388,360	393,085	369,681	1,177,620	1,023,736
Hydrated lime	68,700	67,755	67,054	204,344	183,765
Total	457,060	460,840	436,735	1,381,964	1,207,501
Refractory (dead-burned dolomite)	209,939	218,715	200,715	643,121	556,161

[1]Also includes a small quantity of captive tonnage (6-7 percent of the total reported herein) to maintain comparability with the annual lime statistics. The monthly canvass excludes the output of plants producing less than 10,000 tons a year.

[2]Approximately 60 percent of lime produced is high calcium and 40 percent high magnesium.

Lubrication of Heavy Construction Equipment In Pit and Quarry Industries

By R. K. GOULD
and
E. J. BOWHAY

Research and Technical Department
The Texas Company

PART I

Operating costs can be reduced to the minimum and equipment life can be extended by:

(1) Adopting a simplified lubrication plan which will keep the number of lubricants on the job to the minimum but will still satisfy fully all of the lubrication requirements;

(2) Storing and handling lubricants properly so that chances of contamination will be minimized; and

(3) Establishing a preventive maintenance program which includes a periodic mechanical and lubricant check-up and following it to the letter.

PROGRESS and expansion in the heavy construction field during recent years have been so rapid as to be almost beyond comprehension. Development in new equipment and techniques have combined to convert the impossibilities of yesterday into the routine realities of today. Hills can be leveled; solid rock sliced; and the course of rivers can be altered. Truly, the whole contour of the earth now can be reshaped by man with unbelievable speed and rapidity to fit his needs of the moment — whether they be super-highways, dams, tunnels, sewers, bridges, factory sites, or new residential areas.

Statistics, dry though they may be, frequently are quite revealing. Those which have been compiled on heavy construction operations reflect well the rate at which activity in this field has expanded since the close of World War II.

To describe, even sketchily, the recent developments in the equipment which make the current heavy construction operations possible—the tractor and its attachments, the shovel, the dragline, the scraper, the crusher, the grader, the excavator, and the loader, to mention some—would require volumes.

However, if one could select a single word which would reflect the trends in equipment design that have prevailed during the past few years, it might very well be INCREASE—increase in engine horsepower, in speed, in unit load and capacity, in mobility and flexibility, in size and ruggedness, in ease of operation, and in features which make for more comfort and less strain on the operator. Full advantage is being taken of all the improvements that have been realized in the power units, whether they be gasoline, diesel, or in some cases, LPG engines.

Fully automatic or semi-automatic transmissions have been adopted by many equipment manufacturers. Refinements continue to be made in the design of the hydraulically, electrically, or mechanically operated attachments which permit easier and more efficient operation. Thus, on the whole, new equipment tends to be larger and more powerful—which increases the unit work capacity; but at the same time it is faster, more mobile and much easier to handle—all of which increases overall operating efficiency.

Idle equipment represents an investment but it doesn't perform any work. It must be operating to be productive, and some very interesting statistics have been developed on the costs of keeping it in service. Of each dollar spent on heavy construction operations, 21.3 cents is equip-

230-drawbar horsepower turbocharged tractor.

Courtesy of Caterpillar Tractor Co.

18-cu. yd. struck capacity scraper with 300-hp. engine.

Courtesy of Le Tourneau-Westinghouse

new switch for old rig!

SwitchTractor

Now . . . time-tested Tournatractor

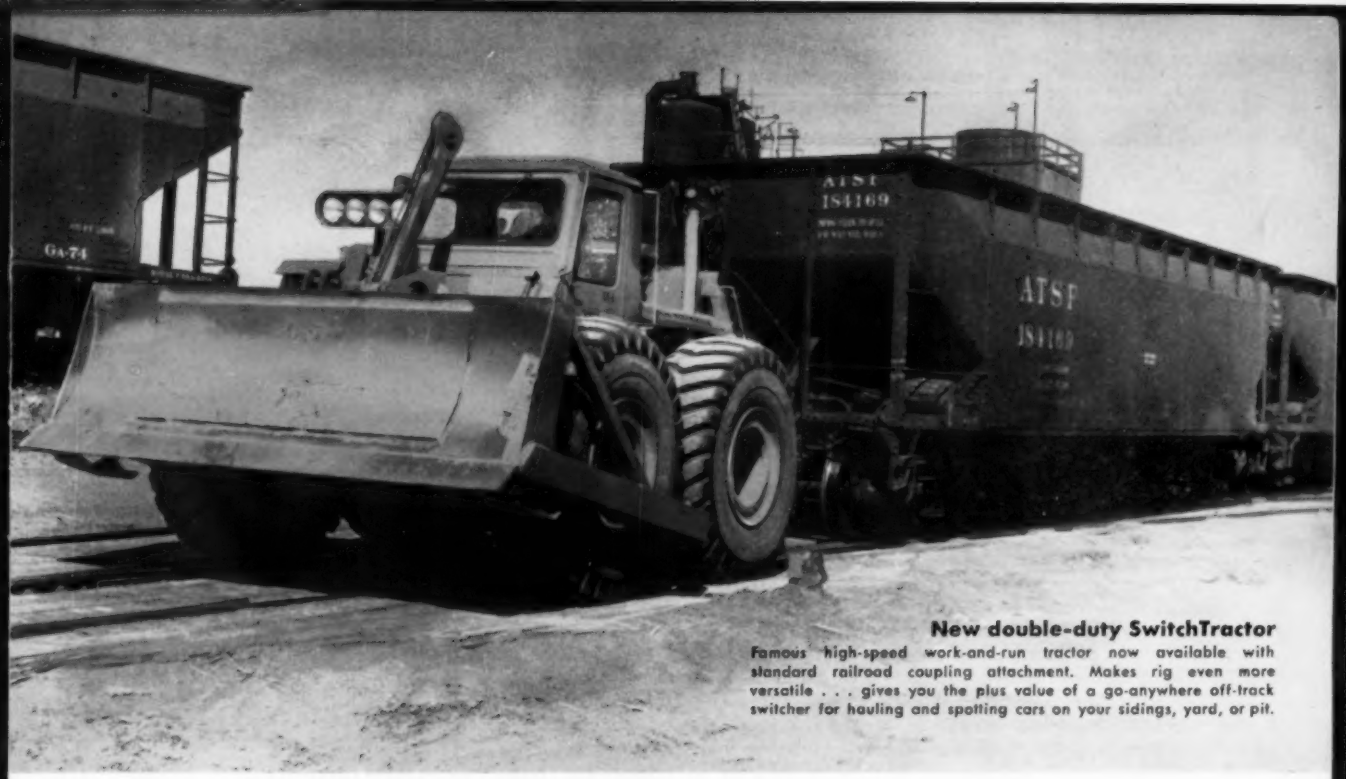
When not needed for spotting or hauling rail-cars, fast-moving, double-duty SwitchTractor drives anywhere around pit or plant on dozing, maintenance, and clean-up chores.

Ten years' hard use has improved and perfected the fast, rubber-tired performance of this work-and-run Tournatractor. Thousands of these machines have proved their value in dozing, hauling, pushing, grading, scarifying, compacting, and snowplowing in practically every country of the world. Each year has seen many major improvements. Wherever speed and maneuverability are needed, these fast-moving rigs have given outstanding service.

Doubles value of Tournatractor

Now — with new *SwitchTractor* application — this versatile unit gives you added utility. Equipped with a standard railway coupler at the rear, SwitchTractor does double-duty on your location . . . switches freight cars on your siding, yard, or pit at a moment's notice. Rig has plenty of power and traction to pull and spot long trains of cars as needed, saving time and money.

SwitchTractor often eliminates the need for maintaining private switch engines and engineers . . . saves charges and delays for RR switch service. Your single SwitchTractor and operator may well handle all your scattered tractor-dozer work — plus whatever freight-



New double-duty SwitchTractor

Famous high-speed work-and-run tractor now available with standard railroad coupling attachment. Makes rig even more versatile . . . gives you the plus value of a go-anywhere off-track switcher for hauling and spotting cars on your sidings, yard, or pit.

also spots and switches freight cars

car switching is required! Highly maneuverable in close quarters, unit turns around in its own length.

Off-track travel cuts switching time

SwitchTractor gives you several important advantages. Rolling on big, low-pressure rubber tires, this go-anywhere rig always takes the shortest route to every switching or hauling assignment. No matter where it happens to be working, unit easily highballs across yards, fields, tracks, ties, ditches, embankments to its next assignment — without damage to machine or roadbed. In hauling cars, it straddles tracks . . . does not chamfer ties or damage switches.

Depending on the distance and number of cars to be spotted or hauled, SwitchTractor can either push (with its dozer or push-plate), or pull with its drawbar. Coupling to cars with drawbar at rear takes but a moment. Coupler is safe, sturdy, standard RR type.

60% vs 30% coefficient of friction

Rolling on big rubber tires over ballast and ties, instead of with steel wheels on steel rails, SwitchTractor develops much more coefficient of friction (60% compared to 30%) than track locomotives of *twice* its weight. That means you have plenty of tractive power for fast starts and stiff rail grades in hauling cars. When not needed for handling cars on your pit or yard tracks, SwitchTractor keeps working productively for you as a dozer or towing tractor.

Worthwhile savings with SwitchTractor

If you have freight cars to move on your siding, yard, or pit, the added versatility of this new SwitchTractor will really pay off for you. Get all the facts on how this coupling-equipped go-anywhere tractor can save thousands of dollars for you in equipment investments and manpower economies. Phone or write us for details and a demonstration in handling *your* type of work.

SwitchTractor—Trademark, Tournatractor—Trademark Reg. U.S. Pat. Off. ST-1075-M

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA **See you at the ROAD SHOW • Chicago • January 28-February 2, 1957**

Courtesy of Iowa Manufacturing Co.

Portable primary double impeller impact breaker.

ment expense (items such as direct operating costs, repairs, and depreciation). Of each dollar of equipment expense, 18.2 cents is for fuel, but *only 3.3 cents is spent on lubricants, including oils and greases.* In other words, 21.3 percent of the total heavy construction costs is for equipment expense, but only about 0.7 percent is spent on lubricants.

Proper lubrication is a "must" if the equipment is to operate satisfactorily and efficiently. This is particularly true for today's modern machines, with their increased speeds and loads and closer tolerances and clearances. The penalty for lubrication failures can be extremely heavy. When one compares the relatively insignificant cost of the lubricant to the replacement cost of the part to be lubricated and adds to that the down time required to make the necessary repairs, it is certainly "penny wise and pound foolish" to make any compromise with lubricant quality—the risk to too great.

Thus the first step toward proper lubrication is to choose the right product—one which has built into it all of the properties and characteristics required to do the job. However, this is not sufficient in itself. The best lubricants in the world are of no real value until they are applied and applied properly—at the right time and in the right quantity. This involves establishing a definite lubrication schedule and adhering to it strictly.

Through the combination of proper lubrication and a good preventive maintenance schedule, the costs of keeping equipment in service can be reduced, and at the same time the equipment life will be extended. It is hoped that the discussion to follow on lubrication and maintenance will be of some benefit to the operators of construction equipment.

SIMPLIFIED LUBRICATION PLAN FOR LARGE CONSTRUCTION PROJECTS

PART REQUIRING LUBRICATION	INTERVAL, HOURS	90-32°F.	32-10°F.
Gasoline, LPG, and Diesel Engines (including misc. oiling parts, such as Air Cleaners, Generators, etc.	100	Heavy Duty Engine Oil SAE-30	SAE 20-20W
Gear Boxes	1000		
Bearing (severe service)	10		
Chain Drives	100		
Flexible Couplings	1000	E. P. Gear Lubricant SAE-140	SAE-90
Universal Joints	1000		
Other oil lubricated parts in heavy duty services	10		
Hydraulic Mechanisms			
Air Compressors	1000	Premium Grade Hydraulic Oil SAE-30	SAE-10
Electric Motors			
Generators and Bearings			
Grease Fittings			
Plain Bearings	10	General Multipurpose Grease No. 1 or 0	No. 00
Track Rollers			
Hand Packed Bearings	100		
Wheel Bearings	1000	Wheel Bearing Grease No. 2	
Roller Bearings	100		
Ball Bearings	100		
Exposed Gears			
Cables	As required	Cable Lubricant	
Wire Ropes			

SIMPLIFIED LUBRICATION PLAN

In order to meet the demands of industry in general, the petroleum companies have made available hundreds of different types and grades of lubricants, represented by thousands of different brand names. From these, the construction machinery manufacturers prepare lubrication charts recommending the various grades or types of lubricants which they feel are best suited for their equipment. However, there has been little progress throughout industry toward standardizing lubrication recommendations. For example, one manufacturer will specify certain grades of lubricants for use on his equipment, while another manufacturer of the same type of equipment with similar basic lubrication requirements may recommend an entirely different set of products. Thus, individually the lubrication charts provided by the equipment manufacturers are usually excellent with respect to lubricant recommendations, but collectively they provide some problems and complications in the field. They are very useful on jobs where there is not a large variety of equipment or where the equipment may be all of one manufacturer. However, on jobs where the number and variety of equipment are great, more products would be required than could be handled conveniently if each manufacturer's lubricant recommendations were followed to the letter. For example, a survey of equipment on a small road job revealed that to meet each spe-

Big-capacity 25-yard B Tournapull is shovel-loaded at South Shore Ready-Mix's Long Island, N.Y., sand-pit. Wide scraper-bowl lets shovel operator load "B" quickly, easily.

Haul heavy loads out of pit through soft, shifting sand

How would *you* solve the problem of hauling heaped loads of aggregate through shifting sands? That's the challenge that faced South Shore Ready-Mix, Deer Park, Long Island, New York, when they had to move big quantities of sand for volume concrete production at their Brentwood, Long Island sand-pit. South Shore solved the problem with their 293 hp, 25-yard B Tournapull . . . using it to profitably haul heaping loads of sand from the pit to a screen-feed hopper.

Hauls through soft, powdery sand

In the sand-pit, B Tournapull is shovel-loaded with sand. Wide scraper bowl makes big, easy target for shovel operator. Powerful 2-wheel tractor . . . riding on big 7′ high, 2′ wide tires . . . hauls heavy load through soft, shifting pit-bottom. Rig, rolling on wide-spreading, low-pressure rubber tires does not bog down in this soft footing, feeds screen-hopper at plant on regular schedule.

Power where you need it

There are 3 big reasons for B Tournapull's success in soft, sandy going: 1) big, low-pressure rubber tires with 2′ wide treads, 2) its exclusive patented power-transfer differential, 3) electric power-steer through geared kingpin.

Tires provide necessary flotation and traction in sand, without digging in. Exclusive torque-proportioning differential automatically equalizes power applied to both drive wheels, for better traction and control, with a minimum of wheel slippage. Positive-power steer pivots prime-mover from side to side to "walk" machine out of soft spots . . . moves trailing unit ahead with each "step" of the prime-mover.

These exclusive Tournapull features sold South Shore on use of the "B" over conventional trucks — which could never have hauled out of the soft pit bottom. Once stalled, trucks have no way to pivot drive-wheels to walk vehicle out of sand. And small duals would bog down hopelessly. Big-tired Tournapull, on the other hand, pulls through where other machines stall . . . hauls loads where others can't go through empty.

Fast, safe, easy to operate

With simple, safe, weather-proof, electric controls, operator handles the powerful "B" easily, with less end-of-shift fatigue. Machine travels from pit to hopper site fast . . . at speeds up to 28 mph. Good visibility, low center of gravity, and big disc-type air-brakes on all 4 wheels make Tournapull safe to operate in the soft, sandy going.

Interchangeable trail units increase profits

South Shore has another advantage in the "B" scraper they use for hauling. At any time, same "B" prime-mover can pull interchangeable 35-ton Rear-Dump. For a fraction of the original investment, extra trailing units could help double the earning power of the 'Pull,' keep it busy hauling shovel rock or other materials in the off-season. Both work units use same wheels, tires, brakes, and electric controls. Change takes just a few hours.

Low-cost . . . big production

Look into the profit advantages of these BIG, 25-yard, 293 hp Tournapulls for your big-yardage assignments. Besides the "B", there's the new 18-yard, 208 hp Fullpak "C", and the 7½-yard, 138 hp "D".

With choice of 10 speeds, operator can always match "B's" speed and power to haul road conditions. With low-gear range, and clutch-brake for fast shifting, he can haul at higher average speeds, and deliver more yards per hour.

B Tournapull hauls sand from pit, dumps load in screen feed hopper at South Shore's Brentwood, Long Island, N.Y., plant.

Fullpak—Trademark, Tournapull—Trademark Reg. U.S. Pat. Off. BP-957-S-b

LeTourneau-WESTINGHOUSE Company, PEORIA, ILLINOIS

A Subsidiary of Westinghouse Air Brake Company

ARBA

See you at the ROAD SHOW • Chicago • January 28-February 2, 1957

cific lubricant recommendation would require five grades of motor oil, four grades of gear oil, three grades of gear and cable lubricant, six greases, a track roll lubricant, a cylinder oil, and a hydraulic oil, for a grand total of 21 different products.

Lubrication of construction equipment on the job is usually not performed under ideal conditions even at best. Time is always of the essence, and frequently the weather conditions leave much to be desired. In such circumstances the contractor will be most reluctant to stock all of the different products required and to insist that his oilers abide by each manufacturer's lubricant recommendation. The personnel responsible for lubricating the equipment know from necessity that the number of lubricants used on the job must be reduced to the minimum. Lacking an alternative, the contractors themselves or their lubrication engineers must decide upon a consolidated group of lubricants to be used where many products have been recommended. Actually, this is placing responsibility where it does not belong. What is needed is a carefully designed, simplified lubrication plan worked out in advance, so that it will not be necessary to improvise simplification methods in the field.

After considerable study of the lubrication requirements of construction equipment, such a simplified plan has been devised. Actual experience on construction work, which has been confirmed by the military, indicates that six basic types of lubricants can satisfy the requirements of nearly all construction machinery. These are shown in the chart, along with the parts to be lubricated and the interval between applications. The required characteristics of the six lubricants are discussed in the sections that follow.

Engine Oils For gasoline engines as well as diesel engines powering construction machinery, it is necessary to use an engine crankcase oil which provides oxidation stability, corrosion resistance, detergent-dispersant characteristics, extreme pressure and anti-wear properties, rust protection, and foam prevention. These are the principal characteristics of engine oils generally known as the heavy-duty type.

Industry has come to recognize several different grades or classifications of these heavy-duty type engine oils. Basically, an acceptable heavy-duty oil is generally recognized as an oil which complies with the requirements of Military Specification MIL-0-2104A. Increased detergent-dispersant properties may be found in those oils which have come to be known as "Supplement I" type oils. Actually there is no established specification covering this type of oil, although the engine test requirements to indicate an oil of this quality level are generally recognized by industry.

Beyond this quality level are the "Series II" oils or "Super-Duty" type oils. These products were developed originally to satisfy the requirements of Caterpillar as "Superior Lubricants (Series II)". More recently Caterpillar has announced a still further advancement in its engine oil requirements designated "Superior Lubricants (Series III)". Oils meeting "Series III" represent about the highest degree of detergency-dispersancy to be found in commercially available lubricating oils for internal combustion engines.

Gear Lubricants Many of the different types of gears, such as the ordinary spur or spiral-bevel where rolling contact

DIESEL FUEL SPECIFICATIONS

	ASTM Diesel Fuels					GMC Detroit Diesel Engine Division			
	Grade 1-D	Grade 2-D	Buda	Caterpillar (See Note 1)	Cummins	Class A	Class B (See Recommendations Below)	Class C	Class D
Gravity, °API	----	----	30–35	26 Min.	30–42	----	----	----	----
Flash, °F., Min.	100	125	150	100	----	----	----	----	----
Viscosity, SSU @ 100° F.	----	(32–45)	(34–41)	40 Max.	(34–42)	----	----	----	----
Viscosity, Kin. @ 100°F., cs.	1.4 Min.	1.8–5.8	2.5–4.5	(4.3 Max.)	2.4–5.0	----	----	----	----
Pour, °F.	10°F. Below Use Temp.		0	20 Max.	10°F. Below Use Temp.	----	----	----	----
Sulfur, % Max.	0.50	1.0	0.5	----	1.0	0.25	0.50	0.50	0.75
Carbon Residue, % Max.	0.15	0.35	0.20	0.35	0.25	----	----	----	----
B.S.&W., % Max.	Trace	0.10	Trace	0.10	0.05	----	----	----	----
Ash, % Max.	0.01	0.02	0.02	----	0.01	----	----	----	----
Corrosion, Copper Strip	Pass @ 122°F.		----	----	Pass @ 212°F.	----	----	----	----
Alkali & Min. Acids	----	----	----	----	----	----	----	----	----
Cetane No., Min.	40	40	46–60	----	45	45	45	40	40
Distillation, °F.									
IBP, Min.	----	----	----	----	----	----	----	----	----
10%, Max.	----	----	----	----	460	----	----	----	----
50%, Max.	----	----	----	----	----	----	----	----	----
90%, Max.	----	675	650	675	675	550	575	625	675
E. P., Max.	625	----	700	----	725	575	625	675	725

	GMC Truck	Harnischfeger	Hercules	International Harvester	Mack (See Note 2)	Murphy	Oliver	Waukesha	Superior
Gravity, °API	----	(This mfr.	----	30 Min.	32–39	----	(This mfr.	----	30 Min.
Flash, °F., Min.	----	specifies	115	125	Legal	150	specifies	----	----
Viscosity, SSU @ 100°F.	----	ASTM 2-D	(32–98)	----	(34–39)	34 Min.	ASTM 1-D	30–50	35–50
Viscosity, Kin. @ 100°F., cs.	----	except for	2.0–20.0	----	2.5–4.0	----	for year-round	----	----
Pour, °F.	10°F. Below Use Temp.	0.5% Max. sulfur content)	10°F. Below Use Temp.	10°F. Below Use Temp.	10°F. Below Use Temp.	10° F. Below Use Temp.	use ASTM 2-D is specified for warm weather operation)	10°F. Below Use Temp.	----
Sulfur, % Max.	0.5		1.5	0.50	0.50	0.5		0.70	1.0
Carbon Residue, % Max.	----		0.20	0.25	0.20	0.20		2.0	0.50
B.S.&W., % Max.	----		0.05	None	0.05	0.05		0.5	0.10
Ash, % Max.	----		0.02	0.02	0.01	0.01		----	0.02
Corrosion, Copper Strip	----		----	Pass @ 212°F.	Pass @ 212°F.	----		----	----
Alkali & Min. Acids	----		----	----	Neutral	None		----	----
Cetane No., Min.	45		45	40	45	45		45	35–50
Distillation, °F.									
IBP, Min.	320		----	325	320	(98% Recovered at 600-650°F.)		----	----
10%, Max.	----		----	----	----			----	----
50%, Max.	----		----	475	475–500			----	----
90%, Max.	550		----	----	----			----	----
E. P., Max.	600		----	610–675	675	----		----	----

NOTES:

[1]Caterpillar Specifies "Commercial No. 2 Domestic Furnace Oils". Specifications Shown Are For ASTM Fuel Oil Grade No. 2.

[2]ASTM Grade 1-D may be used at sacrifice of performance and economy.

GMC Fuel Class Recommendations

Type Service	Ambient Air Temp. °F. Above 80	40	0	−20
Marine	C	B	B	A
Industrial & RR	C	C	B	A
Heavy Mobile	D	C	C	B

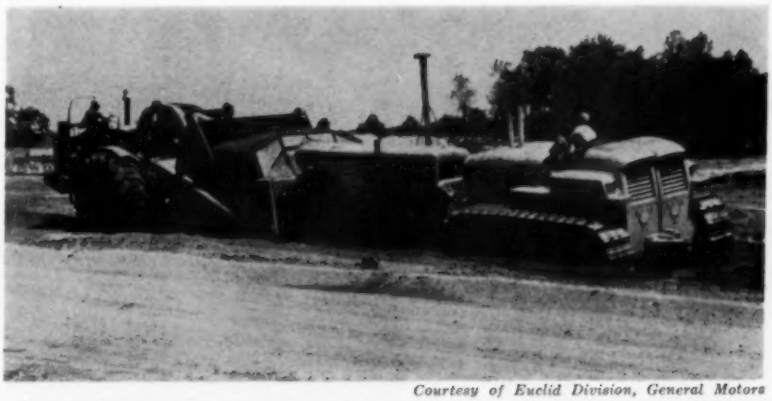
occurs between the gear teeth, can be lubricated satisfactorily with a straight mineral oil. However, where there is a sliding contact between the gear teeth faces as in hypoid or worm gears, the lubricants should be fortified to prevent scoring under heavy loads. These extreme pressure lubricants will also take care of slight misalignments or machining imperfections, and frequently are used for breaking in plain gears.

Since a variety of gears is used in construction equipment, a gear oil containing extreme pressure properties is recommended to insure sufficient load-carrying capacity for all types encountered. A good EP gear oil will absorb shock loads in the heaviest drives and still retain its load carrying properties and will be resistant to oxidation or thickening, corrosion, and foaming.

Hydraulic or Compression Lubricants A highly refined straight mineral oil of the proper viscosity has been and can be used satisfactorily for lubricating air compressors, electric motors, generators, bearings, and hydraulic mechanisms.

However, for hydraulic systems in particular there is usually a tremendous advantage in using a premium grade hydraulic oil. These oils have been so compounded as to resist foaming, oxidation, and sludge formation, and at the same time to protect the system against rust and corrosion. Just a few flakes of rust passing through precision-made pumps or valves may so mar the surface as to affect seriously the efficiency of these parts. Likewise, sludge, such as might be formed from oxidation of the oil, can cause sluggish operation of the mechanisms; it will increase wear and will eventually reduce clearance, plug lines and valves, and cause the system to become inoperative. Consequently for smooth, trouble-free operation of the hydraulic system, a premium grade oil should be employed; and in line with consolidation of lubricants, the same product should be used for air compressors, electric motors, generators, and oil-lubricated bearings, in order to realize the benefits of this type of oil on this equipment also.

General Multipurpose Grease Greases and semi-fluid lubricants are now available which not only form a tough, durable, long-lasting film and cling to the parts to be lubricated, but which also are very water-resistant. Such products are especially suited for track rollers and other bearings which are exposed to mud and water. Track rollers in particular require a lubricant which will be sufficiently fluid to flow through bearing passages and still be non-fluid enough to minimize leakage from worn bearings.



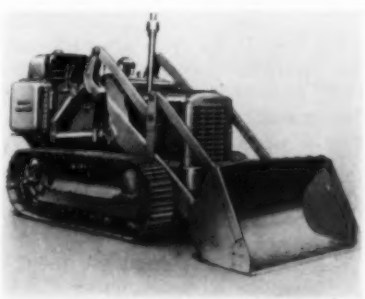
Courtesy of Euclid Division, General Motors

906-hp. combination of an 18-cu. yd. struck capacity twin powered scraper being push-loaded by a twin powered crawler.

Ball and Roller Bearing Lubricant Wheel bearings and hand-packed ball and roller bearings, such as the clutch release and pilot bearings, require a heavier grease which will provide a tough, adhesive film to cushion against shock and make parts last longer. A good grease for such application will provide ideal film lubrication inside a bearing but at the same time will maintain its original consistency at the outer edges, sealing itself in and keeping out grit and water.

Exposed Gears and Cable Lubricant Open gears require a lubricant which will cushion load shocks, decrease noise, and reduce wear. It must not channel or throw-off, but should cling to tooth surfaces and follow through from gear to gear even at high pressures, temperatures, and peripheral speeds.

For cables and wire ropes, the product must penetrate into and preserve the core, preventing collapse. It should seal each wire in a tough, viscous film to reduce internal friction and wear, keep out moisture, prevent corrosion, and extend the rope life.



Courtesy of Caterpillar Tractor Co.

1-cu. yd. capacity single unit tractor-shovel.

Lubricants have been developed which have been endowed with the properties necessary to satisfy both of the foregoing requirements. Consequently, if properly selected, a single lubricant may be used for both open gears and wire ropes.

These, then, are the basic properties and characteristics of six types of lubricants which will satisfy most of the main lubrication requirements of heavy construction equipment. This simplified plan is flexible and can be modified and adjusted to meet any given situation. It should be regarded as a guide in assisting operators of construction equipment to reduce their inventory of different kinds of lubricants to the minimum with the assurance that their machines will be lubricated satisfactorily.

Although the recommendations outlined cover the vast majority of equipment, there may always be certain exceptions or conditions which will necessitate special lubricant recommendations. For example, special products may be required for such applications as water pumps (shaft seal type), fifth wheels, electric motors and generators (anti-friction), rock drills, steam cylinders, waste-packed car journals, brake drum bearings on power shovels (severe service), concrete forms, and rust proofing of equipment in storage.

Also, it is not advisable to make a general blanket recommendation for torque convertors and hydraulic couplings. Since there are wide variations in lubricant requirements for these components, product recommendations should be made on an individual basis.

Courtesy of Allis-Chalmers Mfg. Co.

Loading a truck with a 2¼-cu. yd. crawler tractor-shovel.

Generally speaking, construction equipment manufacturers look very favorably on a simplified lubrication plan, as evidenced by the following comments.

A diesel engine manufacturer: "Many contractors and users of large quantities of lubricants should profit by such a program."

A manufacturer of generator sets: "We appreciate the advantage of standardizing on the minimum number of lubricants."

A manufacturer of road maintenance equipment: "We believe that a simplified and standardized lubrication program has been needed for a long time."

An excavator manufacturer: "We believe that the types and grades of lubricants can be materially reduced, so that a contractor will not be required to carry so many different kinds of lubricants to properly service a piece of construction machinery."

A manufacturer of loaders: "We certainly approve such a plan. We believe the fewer lubricants specified, the more likely that the correct one will be used."

A manufacturer of paving equipment: "It is not only a nuisance to the contractor but could be detrimental if a contractor is compelled to handle too many different types of greases and oils."

FUELS

Gasoline For the gasoline engines powering the various types of equipment with which we are concerned in this article, the regular grades or housebrand gasolines should be entirely satisfactory. Octane ratings of these gasolines are now sufficiently high throughout the country so as to satisfy the octane requirement of even the latest types of equipment for construction service.

Volatility or distillation characteristics of modern gasolines are carefully controlled for quick starting, rapid warm-up, protection against vapor lock, and uniform performance with respect to power and economy. This controlled volatility is maintained not only to satisfy ever changing climatic conditions in a given area but also for any section of our country.

Diesel The majority of the manufacturers of diesel engines used in construction machinery either specify a No. 2 grade of fuel or have established specifications which are usually broad enough to be met by a reputable supplier of diesel fuels of this grade.

As a possible aid in selecting the proper grade of diesel fuel, a table has been prepared showing the diesel fuel specifications of the majority of the diesel engine manufacturers whose engines are used in construction equipment. For comparison, the requirements of the ASTM Grades No. 1-D, and 2-D of diesel fuel are also shown.

STORAGE AND HANDLING

The petroleum supplier takes every precaution necessary to assure that lubricants are in the best possible condition when delivered to the customer. The user, likewise, should exercise equal care to see that when a lubricant is applied, it is in the same good condition as when it was received.

All of us know from experience the consequences of eating spoiled or contaminated food—illness, treatment, and doctor bills. Consequently, we take extreme measures to protect food and be sure that it is in satisfactory condition when we consume it. In a sense, fuels and lubricants are the food of machines. If they are fed spoiled or contaminated products, they, too, can become ill, and the treatment and "doctor bills" as represented by repairs and new parts can be very costly and expensive.

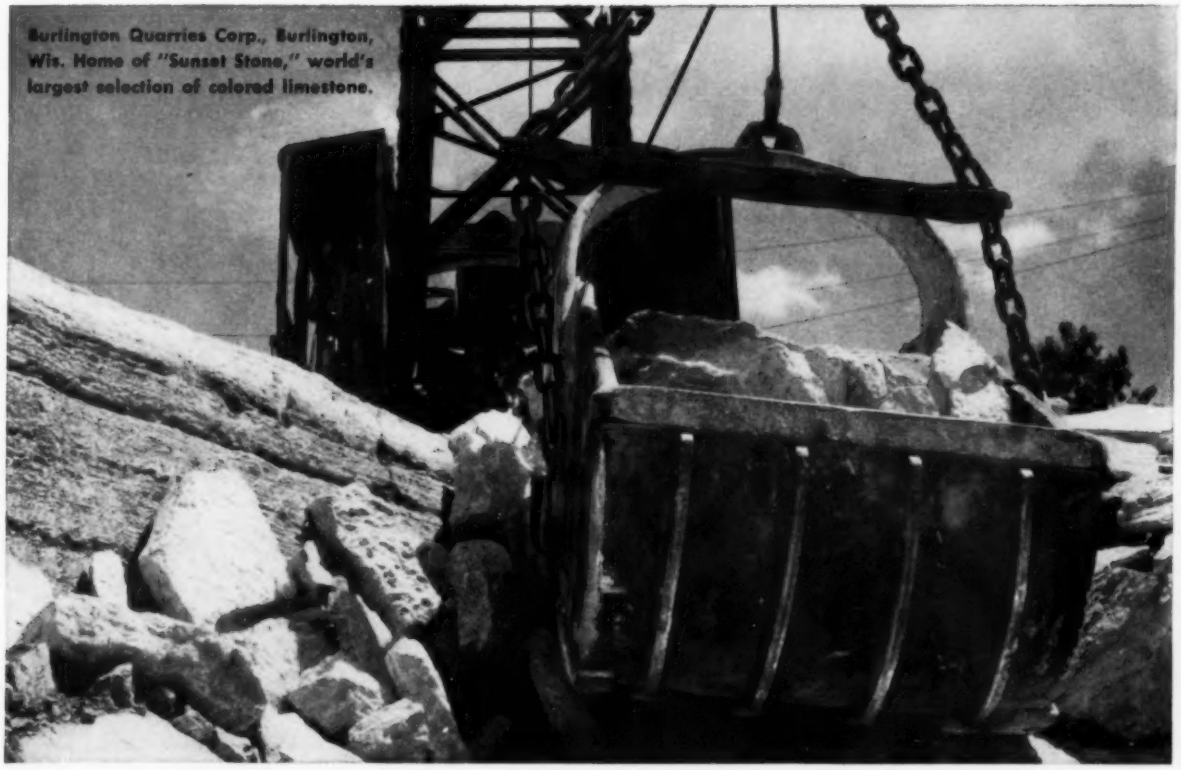
Many things can happen to a lubricant between the time it is received by the customer and the moment it is applied. Such things as careless handling, contamination, confusion of brands, exposure to extreme temperatures, and leakage can result in damaged equipment, excessive maintenance cost, and lost productive effort. The conditions under which a producer must store and handle lubricants are particularly hazardous from the standpoint of contamination and exposure to temperature extremes. Consequently, he should be unusually careful to see that nothing detrimental happens to them.

Leakage Loss of lubricant from damaged containers, loose-fitting plugs, or careless handling (spilling) represents a product that the user has purchased but will not be able to use. This all adds up to waste.

Contamination All contamination is undesirable and should be avoided, but the extent of the consequences will vary, depending on the type of lubricant and the nature of the contaminants. In general, lubricants containing additives will be affected more adversely than will straight mineral oils. For example, a little moisture will not result in permanent damage to straight mineral oils. They may become cloudy but will clear up after standing, as the moisture settles to the bottom. Certain additives, however, may be water-sensitive and may be removed partially or completely by contact with just traces of water. Water will also cause separation or lump formation in certain types of greases.

Contamination with dirt, dust, or other solid bodies can be especially harmful if not discovered in time. Not only do these materials accelerate oil oxidation and shorten oil life, but they can also cause severe damage to the moving parts of the machinery because of their abrasive properties.

Thus, extra precautions should be taken to protect lubricants from contamination. At best, it can cause extra handling if discovered before



Burlington Quarries Corp., Burlington, Wis. Home of "Sunset Stone," world's largest selection of colored limestone.

"Draglines give 10,000 Hours of Trouble-Free Performance with Cities Service C-300 Motor Oil!"

Greasing of Dragline Bearings Cut 90%—Burlington Quarries reports about switch to Cities Service Trojan H-2 Grease. "Pump in Trojan H-2 and it stays!" they say.

How to Make Beautiful Sunset is an art for which Burlington Quarries is famous. Here, colored "Sunset" stone is cut by one of their wire saws.

... And Trojan H-2 Multi-Purpose Grease cuts greasing of bearings by 90%, reports Burlington Quarries Corporation.

At Burlington Quarries, every man, every piece of equipment is kept constantly busy, hurrying to meet the nationwide demand for Burlington's famous "Sunset" colored limestone.

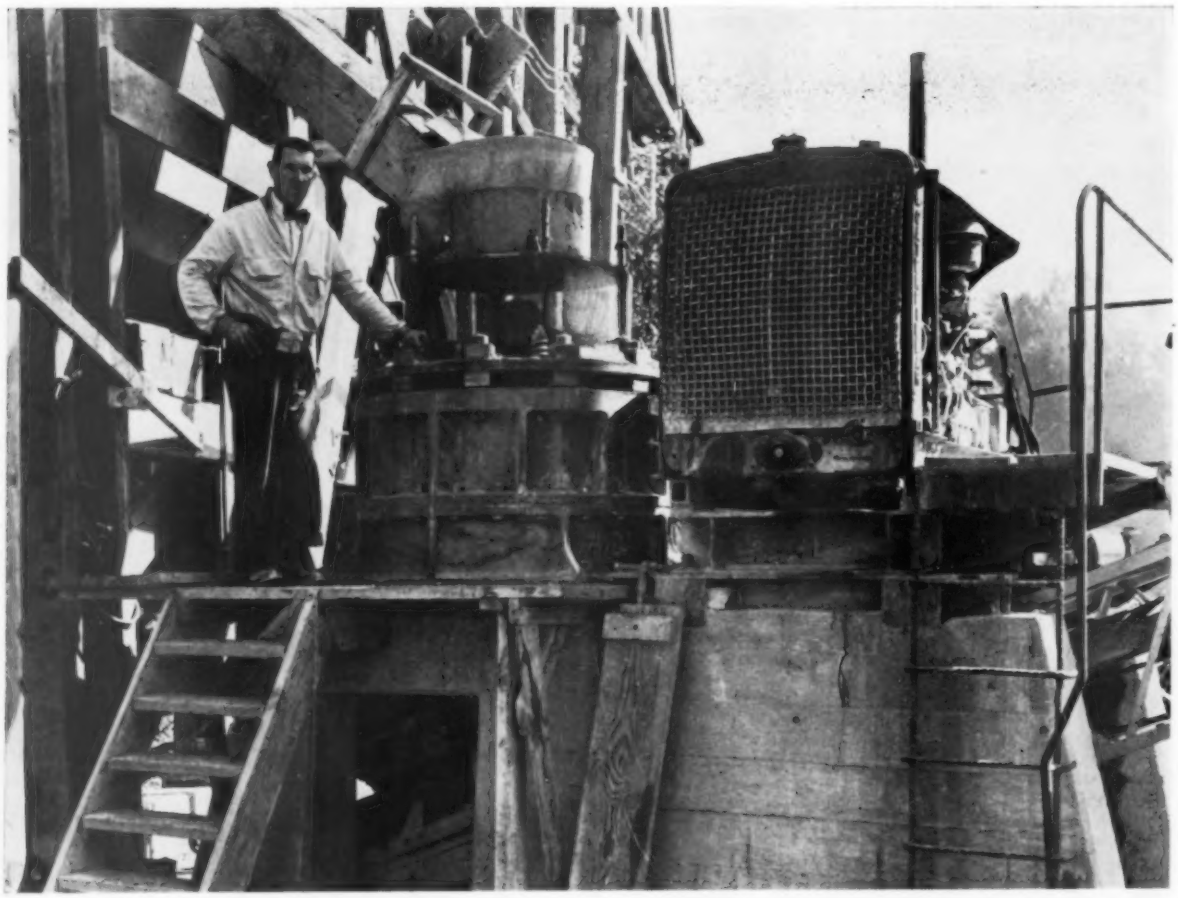
Draglines get an especially tough workout because Burlington Quarries uses them to quarry their stone instead of having it quarried out by hand with stone cutters. "But thanks to Cities Service C-300 Motor Oil and its high detergency, we've operated for over 10,000 hours without one bit of trouble," says Burlington.

Another Cities Service product that's been a tremendous help to their operation is Trojan H-2 Multi-Purpose Grease. Before they started using it, someone would have to go out every morning and pump grease into the bearings of draglines. But then, with Trojan H-2, they'd start pumping and it would push out grease that had been put in before. It soon became evident that Burlington could cut down greasing of bearings by 90%, because when you pump in Trojan H-2 Multi-Purpose Grease, it stays there!

If you're not getting that kind of results from your lubrication, talk with a Cities Service Lubrication Engineer. Chances are he can help you. Or write: Cities Service Oil Company, Sixty Wall Tower, New York 5, N. Y.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS



HEADROOM LIMITED? . . . KUE-KEN® GYRATORY CRUSHER FITS EASILY . . . TAKES CHOKE FEED

Space limitations need no longer stop you from taking advantage of gyratory crushing. Kue-Ken crusher is compact and light yet strong. It has the largest, longest wearing shaft and bearings. Kue-Ken is the only gyratory crusher that operates on the "crushing without rubbing" principle. Rubbing, the main cause of liner wear, is substantially reduced. Liners last far longer than with other crushers. Short stroke makes for smooth operation and more uniform product.

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VANCOUVER, B. C. ..... Universal Equipment Co.

Pennsylvania Crusher Division, Exclusive Licensed Eastern Manufacturer and Distributor, 323 S. Matlack St., West Chester, Penn.
Armstrong Whitworth (Metal Industries) Ltd., Authorized Licensed Manufacturer and Distributor. Close Works, Gateshead-upon-Tyne 8, England

the product is used (filtering out solid particles or allowing water to separate). Furthermore, contamination may permanently destroy some of the important properties of certain additive-type lubricants—properties which are essential for satisfactory lubrication of the equipment where the product is to be used. Finally, if the contamination is not detected, some very serious consequences can result, including damaged equipment, costly repairs, and lost production.

Extreme Temperatures Exposure to either abnormally high or low temperatures also can result in temporary or permanent damage to lubricants, depending on the nature and composition of the product. Again, it is the additive-type products which are most subject to harm.

Of the two extremes, contact with low temperatures is by far the more prevalent due to outdoor storage in areas where the winter weather is very cold. If nothing worse, exposure to low temperatures causes lubricants and greases to become viscous and stiff, making them difficult to handle. Various means are commonly used to heat products which have been subjected to low temperatures, some of which are not to be recommended. Where direct heat is applied, there is always danger of developing local overheating which may ruin the lubricant.

Dispensing On construction operations in particular, it is most advisable, if at all possible, to apply the lubricant directly from the original container in which it came. The elimination of intermediate transfer receptacles erases a very serious source of contamination. Dispensing equipment is now available to fit all of the standard containers used to package lubricants and greases. They permit product to be removed from its original container with no damage of contamination, waste, or mess.

Storage Suggestion Some suggestions that apply to storage and handling of lubricants are outlined as follows:

1. Choose storage area carefully. Select a central location so that hauling distances are as short as possible. Also, select an area where the atmosphere is free from dust and vapors.

2. Store lubricants indoors if possible—chances of contamination will be reduced.

3. If stored outdoors, drums should be placed on their side and on racks—don't lay them on the ground. When placed upright on end, rain water may accumulate and be sucked into the drum by the normal breathing action. If stored outdoors on end even temporarily, cover should be available to place over the drum in the event of inclement weather.

4. Cleanliness is essential, regardless of whether storage is indoors or outdoors.

5. Orderliness is another must. By keeping different brands and types of lubricants separated and in their proper places, there is less chance for confusion and error.

6. Don't store more products than necessary. The lubricant supplier will be glad to make a survey of lubrication requirements to keep the number of different products to the minimum. This also will reduce chances of confusion.

7. Exercise extreme care in heating products that have been exposed to low temperatures. If possible, transfer drums to a warm area and allow the product to reach room temperature. If more rapid heating is required, use exhaust steam. Never apply direct heat, such as a flame, to the exterior of the drum. This could melt the sealing compound and cause leaking. It might also harm the product.

8. Remember that exposure to temperature extremes can damage lubricants. If there is any reason to suspect this condition has occurred, examine the lubricant before using. If the product appears abnormal, consult the lubricant supplier as to what to do. The lubricant may have to be discarded or it may be salvaged.

American Cyanamid Plans Operation at Brewster, Fla.

American Cyanamid Company officials have announced plans to build a 200,000-ton-per-year triple superphosphate plant at Brewster, Fla.

The plant will be built on an existing Cyanamid site at Brewster, where phosphate rock is mined. Construction will begin immediately and is expected to be finished in 1957.

Chemical Construction Corporation, a Cyanamid unit, will design and construct the plant in collaboration with Dorr-Oliver, Inc.

Mall Tool Co. Purchased By Remington Arms Co., Inc.

Remington Arms Company, Inc., Bridgeport, Conn., has entered into an agreement whereby it will purchase the Mall Tool Company of Chicago.

The terms of the agreement, which will be consummated when settlement details are completed, include Mall's Canadian subsidiary, Mall Tool Ltd., of Toronto.

Remington Arms said the acquisition is a step in its program to expand its industrial products line. The Mall purchase, according to a Remington Arms spokesman, "is a further means of diversifying our product lines".

• W. R. Thomas (left) being presented with a watch by Charles E. Marshall, executive vice-president of Fort Worth Sand & Gravel Company, Fort Worth, Tex., in recognition of 30 years of service to the firm. Mr. Thomas was production superintendent in charge of sand and gravel operations until last year. He is presently production manager of the concrete divison of Texas Industries, Dallas, Tex.

Mall, which operates plants in Chicago, Crete, Ill., and Toronto, Ont., is a leading producer of portable electric tools, pneumatic tools, gasoline engine chain saws, flexible shaft equipment, and other gasoline-powered tools.

Hoist Rating Chart, Glossary Published by Trade Assn.

A new *Hoist Classification Rating Chart*, Issue No. 3, has just been published by the Truck Body and Equipment Association, Inc., to provide a means of standardizing capacity ratings and a convenient method of comparing hoists manufactured by the association members.

A *Glossary of Terms*, intended for use as a standard reference in connection with hydraulic hoist, steel dump body, and lift gate manufacturing operations, has also been published by the T.B.E.A.

Copies are available from the T.B.E.A. National Executive Offices, 403 Washington Board of Trade Building, 1616 K Street, N.W., Washington 6, D. C.

Oregon Portland's New Quarry Features Mile-Long Conveyor—

First Step in $4,000,000 Expansion

Another ON THE SPOT Report

OREGON Portland Cement Company is currently right in the middle of a $4,000,000 expansion program involving both quarry and plant improvements.

Capacity of its western Oregon plant at Oswego is being enlarged by an additional 700,000 bbl. annually through the installation of another 287-ft. kiln, and new dust-collection and grinding equipment. Screens, crusher, and added storage facilities for slurry and finished cement are also being put in service at Oswego. Re-equipping is also under way at the Polk County quarry, which supplies some of the raw material requirements at the Oswego plant.

The company's eastern Oregon plant, 375 miles from Oswego, at Lime, Ore., which has been a one-kiln operation since the early 'twenties, is also scheduled for considerable enlargement and improvement.

A new quarry and a new crushing plant were opened at Lime in 1955, together with a long down-hill conveyor system, to complete the first phase of the company's extensive program. The Lime quarry also supplies limestone to the Oswego plant, shipments going by rail at the rate of about 20 carloads daily.

By HARRY F. UTLEY

Since 1923, when the plant at Lime first went into production, an aerial tramway had carried the stone to the plant. Because the original deposit in the mountain range west of the plant neared depletion, and because the old tramway was unable to supply the growing demand, company officials decided to open up a new quarry in the high-calcium deposits it controlled in the hills a little more than a mile east of the plant.

The principal feature of the new quarry development, certainly the most spectacular, is the long (5,604-ft.) down-grade belt-conveyor system made up of 6 separate flights and featuring both mechanical and electro-regenerative braking. Since the load on the conveyor is downhill for the most part, except for starting requirements, electric power is generated rather than used much of the time by the drive motors.

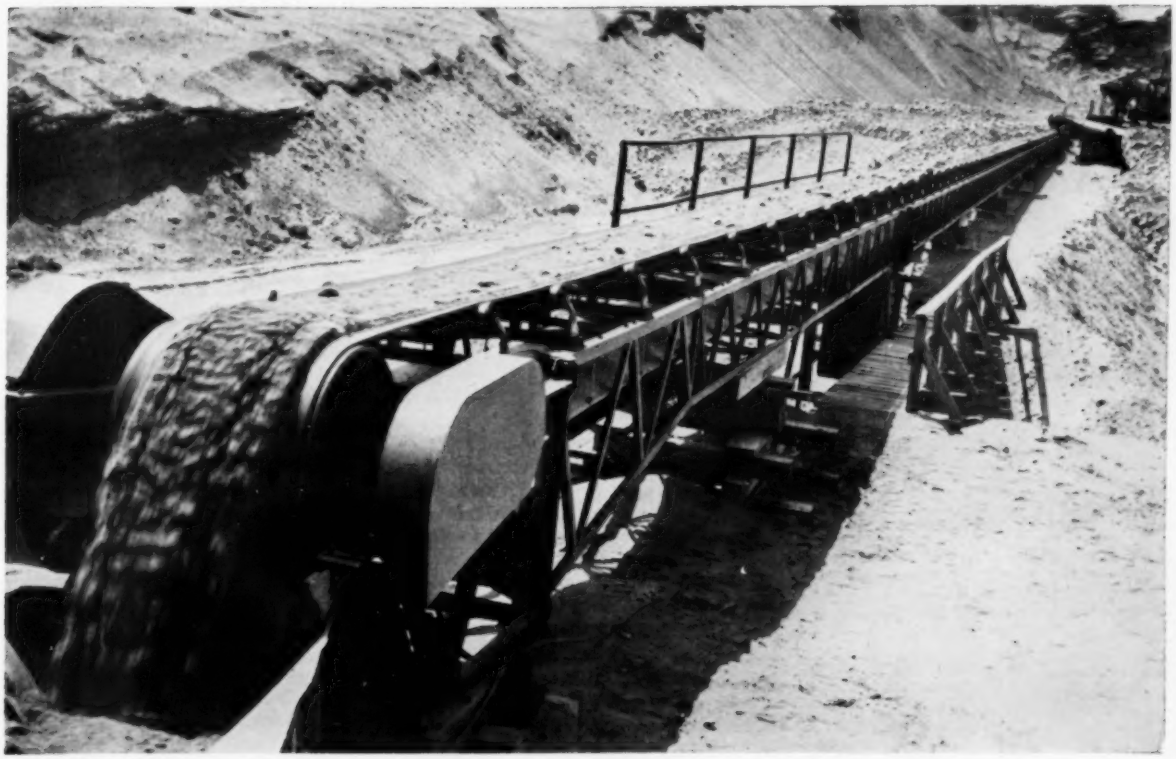
Single faces are being worked at the start in the new quarry, which is at an elevation 735 ft. higher than the plant itself. Eventually it is to be developed on 50-ft. benches. The main drilling machine is a Joy 4½-in. rotary mounted on a Caterpillar D8 tractor, holes being patterned on 12-ft. centers. An average millisecond-delay blast will bring down about 40,000 tons of well-fragmented stone which requires practically no secondary shooting. Two Euclid 16-ton capacity quarry trucks are loaded by a P&H Model 1055E 3½-cu. yd. 2300-v. crawler-mounted shovel for the 200-yd. trip to the receiving hopper.

Housed in a separate building nearby is an Ingersoll-Rand Type XLE 4-stage compressor which supplies the air needed in the quarry. The compressor is driven by a General Electric 200-hp. synchronous motor.

The steel receiving hopper has a capacity of about two truckloads and a Pioneer Oro-style feeder, a grizzly spaced at 5 in., and a Lippmann 36-by 48-in. 150-hp. "Grizzly King" jaw-crusher produce the minus 5-in. stone, which is then ready for the trip down to the plant.

Although the 5,604-ft. long belt-conveying system is made up of six separate flights, about 80 percent of

This view, taken at an elevation about 1,000 ft. above the Lime plant (a mile or more away), shows the long conveyor system snaking its way down the terrain. On the mountain beyond the plant is the old quarry.



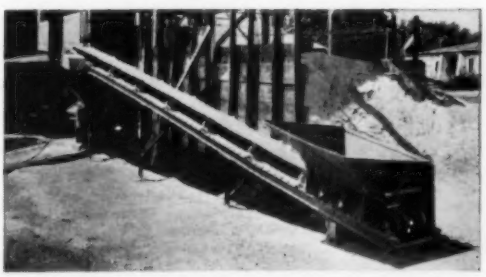
LONG HAUL—Even the longest Barber-Greene Conveyors are built of standardized components . . . produced on a precision, quantity production basis. They can be assembled in almost limitless combinations to cut the time and cost of any material handling job.

Long or short haul—it costs less to move materials with belt conveyors

Thousands of installations—ranging from a few feet to thousands of feet—prove that belt conveyors move bulk material at lowest cost.

No other machine is so simple in construction or requires so little maintenance. No other machine can deliver such high hourly capacities with so little power or attention.

Barber-Greene has given a new meaning to belt conveyor economy. Built of standardized components, Barber-Greene Conveyors are delivered sooner . . . require less engineering . . . are erected faster . . . give top performance . . . and are more easily altered to meet changing or expanding requirements. Being standardized, repair parts are readily available—usually from the stock of your local distributor.



SHORT HAUL—Even the shortest Barber-Greene Conveyors are available in standardized components in the width and length to suit your needs. These small conveyors provide the economical way to handle the widest range of materials with greatest flexibility.

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Send for this 192-page conveyor book. It's comprehensive, easy to use.
Write for Catalog 76-A on your company letterhead.

See you at the ROAD SHOW

Barber-Greene BG

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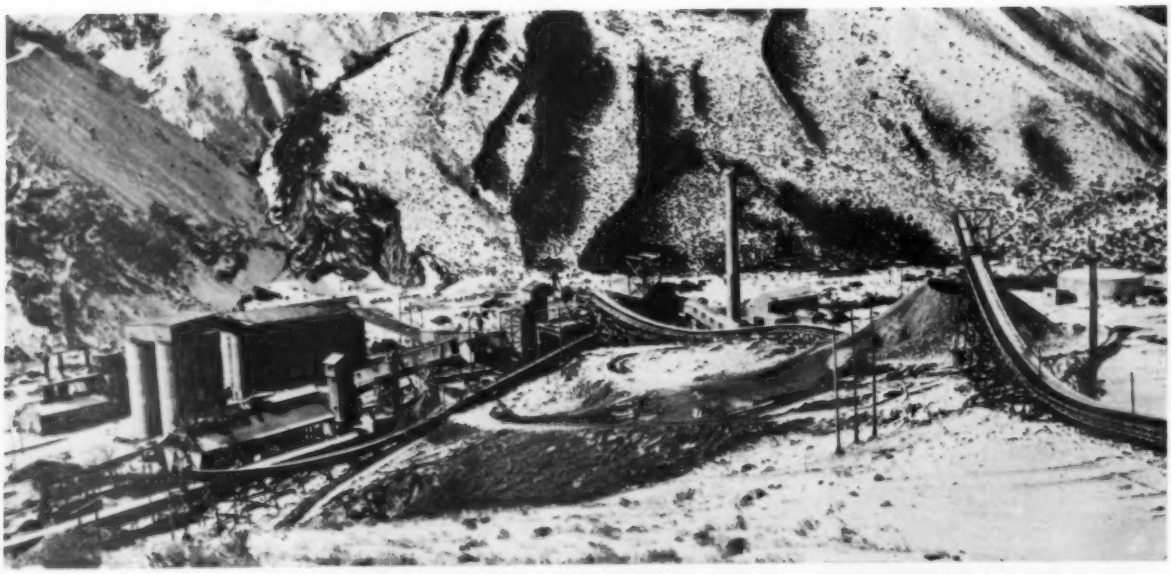


The plant at Lime is located in a canyon along U. S. Highway No. 30. Storage pile and terminus of the mile-long conveyor system is shown together with conveyors serving the raw end of the plant and the car-loading facilities. At the left of the silos is an old shaft-kiln plant which once burned lime, inoperative for many years.

the distance is concentrated in the second and third flights, which total 4,335 ft. on centers. Except for the 36-in. by 332-ft. first flight, which carries from the Lippmann crusher to build up the first of three 20,000-ton surge piles enroute to the plant, the belting is all 30 in. wide and consists of Goodyear Super-Rayon "Style B" 4-ply fabric and rubber carrying a nylon breaker strip.

The second surge pile is located between the two long No. 2 and No. 3 conveyor flights, and the third near the end at the cement plant. Recovery from the piles is by 10-ft. diameter tunnels served by Jeffrey-Traylor feeders which supply the belts. These storage piles provide a high degree of flexibility and independence of the plant in the raw-stone supply, and the system has a carrying capacity of 450 t.p.h. All belting on the conveyor system is protected from the weather by corrugated-steel housing.

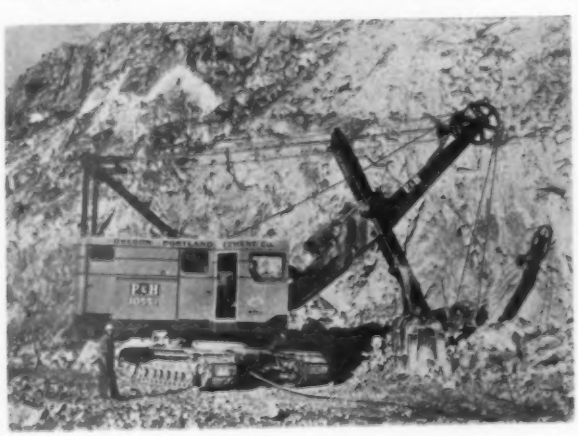
The critical points in the conveyor system, as one might suspect, are on flights No. 2 and No. 3, each about 2,170 ft. on centers with a total drop of more than 500 ft. Two identical GE 100-hp., 900 r.p.m. 2,300-v. motors are used on each drive, transmission being through Falk reducers and roller chain. Both motors are tied together by 2:1 ratio multiple V-belting, which allows one motor to start the belt at 50 percent speed.

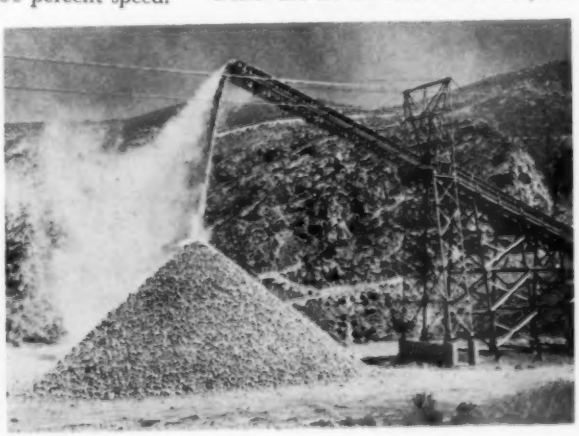
Right: The new 36- by 48-in. primary jaw crusher and motor shortly before it went into service, awaiting only the installation of the V-type drive belts. The crusher is open-mounted on steel I-beams and concrete supports, for accessibility.

The starting motor automatically cuts out after 3 minutes, and the second motor then cuts in to bring the

A close-up of the final surge pile at the end of the quarry-to-plant conveyor system. Two other surge piles served by reclaiming tunnels are also involved, providing about 60,000 tons of open storage between the crusher and the raw feed bins in the plant.

The 3½-cu. yd. electric shovel at work opening up the new quarry. Single-face operation will be changed to benching at 50-ft. levels later on.





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This increase in power reflects Caterpillar's policy of leadership in action. Combining research with practical field experience, there's constant product improvement to meet your needs for bigger production at lower cost. This policy applies to *every* product in the Caterpillar line—Diesel Engines, Tractors, Motor Graders and Earthmoving Equipment.

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Caterpillar Tractor Co., Peoria, Illinois, U.S.A.

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D9—MORE POWERFUL FOR BIGGER PRODUCTION

belt up to its designed full operating speed. Mechanical and Thrustor-operated brakes control belt travel and protect the drive equipment in the event of power failure or dangerous belt speed up. The motor and braking system is extremely simple, yet it has proved entirely effective.

At the end of the conveyor run, the stone is separated by a Tyler 48-in. by 10-ft. vibrating screen, the 2¼- by 5-in. oversize going *via* shuttle belt to cars for shipment to Oswego and the minus 2¼-in. being conveyed to the raw-mill bins in the adjoining cement plant.

There have been few major changes in the flow-sheet of the plant at Lime during its 33 years of operation. The most important, perhaps, took place in October, 1953, when Raymond direct-firing bowl-mills were installed to fire the Vulcan 10- by 210-ft. kiln, replacing the old coal-grinding and feeding system. Coal is shipped in from the bituminous mines in Utah. Of the other raw components used, iron ore and gypsum are received by rail, while the shale is trucked in from a quarry located about 10 miles down the canyon from the plant.

Main offices are located in the Oregon Portland Cement Building in Portland. Frank E. McCaslin is president; H. D. Leche, vice-president and general superintendent; and H. R. Shipley, assistant general superintendent.

Lauchlan McLean supervises plant operations at Lime. Lawrence Bunch is the quarry superintendent.

Consistent Gains Recorded In N. Central States Output Of Minerals During 1955

This is a preliminary report of mineral production in the North Central states in 1955, as prepared by the United States Bureau of Mines and the division of Geological Survey, Indiana Department of Conservation, the Department of Conservation of Michigan, the Geological and Natural History Survey Division of Wisconsin, the Geological Survey of Illinois, and the Iowa Geological Survey.

In 1955 the aggregate value of mineral production in Indiana reached an all-time high of $182,100,000, surpassing the previous record (1951) by nearly $8,000,000. Most of the increase was in minerals used in the construction industries. The value of stone, sand and gravel, and cement increased substantially over the previous year. Coal production increased about 20 percent in 1955, approximating the 1953 level.

The leading minerals produced in Indiana in 1955 were coal, petroleum, stone, sand and gravel, clay, and cement. Indiana continued to be the leading producer of dimension limestone in the United States.

The estimated value of mineral production in Michigan in 1955 was $346,600,000, an increase of nearly 23 percent over 1954. Major increases, over 10 percent, were recorded in the production of copper, iron ore, marl, sand and gravel, lime and limestone. Gains of less than 10 percent were noted in other nonmetallic minerals, but clay output decreased. Output of petroleum and natural gasoline decreased, and no coal was produced.

Iron ore continued to rank first in value of the minerals produced with 29 percent, followed by cement 15 percent, copper 11 percent, petroleum 10 percent, salt 9 percent, sand and gravel 8 percent, stone (except limestone for cement and lime) 6 percent and all others 12 percent. Of the total value of output, nonmetallic minerals accounted for 50 percent, metals 40 percent and fuels 10 percent.

Production of copper in Michigan in 1955, in terms of recoverable metal, was more than double that of 1954. The increase was primarily the result of output from the White Pine mine of the White Pine Copper Co., a subsidiary of Copper Range Co.

Value of mineral output from Wisconsin mines in 1955 totaled nearly $60,000,000, compared with $55,000,000 in 1954, an increase of 10 percent. In order of value in 1955, minerals produced include: sand and gravel, iron ore, limestone, cement, sandstone, zinc ore, lime, granite, basalt, and lead ore. In value these minerals represented over 99 percent of the state's total. All recorded notable increases in output and value over 1954 except for limestone and granite. Other mineral commodities produced in 1955 included abrasive stone (tube mill liners and grinding pebbles), clay, marl, quartzite, and peat.

In value, nonmetallic minerals (cement, clay, lime, marl, sand and gravel, and stone and stone products) accounted for nearly 70 percent of the total mineral output of the state. Of these nonmetallic products used primarily in the construction industry represented 61 percent of the Wisconsin total.

The estimated value of mineral production in Illinois in 1955 was $549,000,000, an increase of 14 percent over 1954. Increases in production over 1954 were recorded for virtually all minerals produced in the state. The exceptions were clay and tripoli. Petroleum led in value of production, followed by coal, limestone, sand and gravel, cement, fluorspar and lime in that order. Of the total value of production, fuels accounted for 79 percent, nonmetallic minerals 20 percent, and metals 1 percent.

Lead, zinc, and silver were the only metals produced in Illinois. Most of the zinc and a small part of the lead were produced in Jo Daviess County. The remainder of the lead, some zinc, and all of the silver were produced as a by-product or co-product of fluorspar mining in Hardin County. The increased price of lead and zinc and the demand for fluorspar were responsible for the increased production.

In production of nonmetallic minerals limestone led with 6 percent of the total state value, followed by sand and gravel—5 percent; cement—4 percent; and fluorspar and lime—both 2 percent. Production of fluorspar in Hardin County increased over 1954 by 52 percent in both quantity and value. Increases in value of lime, limestone, sand and gravel, and cement were 21, 13, 7, and 1 percent respectively and show the continued high level in road and building construction.

Fuels led all other minerals in value of production. Output of petroleum was 22 percent greater than in 1954 and coal 1 percent.

Mineral production in Minnesota in 1955 was valued at nearly $500,000,000, the second-highest value of mineral output recorded in the state's history and a 42 percent increase over that of 1954. The record year was in 1953, when the value of mineral production was $543,000,000. Greater demand for iron ore was the chief reason for the increase over 1954. The value of shipments of iron-bearing ores (including those ores containing 5 to 35 percent managanese) represented about 94 percent of the total value of minerals produced in the state in 1955.

Preliminary data also indicate increases in production of cement, clays, lime, marl, peat, sand and gravel, and quartzite. A slight decrease in output was reported for limestone. Minnesota has one cement plant. Quicklime and hydrated lime were manufactured from limestone produced in Michigan. Sand and gravel, chiefly for road and construction use, were produced in most counties. Stone products include granite, limestone, marble, quartzite and sandstone.

More Information, Please

Use the prepaid postcard to get this literature or additional details about new equipment and products reported elsewhere in this issue.

TRU-LAY PUSH-PULL flexible controls, manufactured by the *Automotive & Aircraft Division, American Chain & Cable Company, Inc.*, can be used on practically all types of equipment, including quarrying machinery, materials handling equipment, and mining equipment. Push-Pull control, as a means of transferring push and/or pull movements from one location or mechanism to another, is designed for accuracy, long life, high load capacity, and flexibility. (1)

CATALOG NO. 62, covering Ajax Series D-100 standard, floating shaft, and mill motor type dihedral couplings, has just been published by the *Ajax Flexible Coupling Company, Inc.* Complete working data is given on sizes, capacities, and dimensions of Series D-100 couplings designed to handle angular and offset misalignment up to a total of 12 deg. (2)

WIRE ROPE is a Machine, a revised edition of *Jones & Laughlin Steel Corporation's* manual on wire rope, is now available. The 96-page manual contains information on the selection, installation, and best operating practices for wire rope. (3)

THE E-56 ENGINEERING MANUAL, just released by the *Amplex Division, Chrysler Corporation,* has been thoroughly revised and contains complete details about Oilite products. The manual features data on properties of Oilite materials and contains descriptions of their industrial applications. A special 12-page insert lists over 1,000 standard Oilite sleeve, flange, and thrust bearings, cored, solid bar, and plate stock. (4)

LUBRIPLATE DATA BOOK NO. 56-1, a 15-page booklet containing product data and recommendations on this line of specialized lubricants produced in various types of fluids and greases for a variety of applications, has been newly revised by the *Lubriplate Division, Fiske Brothers Refining Company.* (5)

MINERAL FLOTATION WITH ARMOUR CATIONIC CHEMICALS is the title of a new booklet prepared by the *Chemical Division, Armour and Company.* Topics include a review of the principle of cationic flotation, chemicals used, conditions needed for successful flotation, and advantages inherent in cationic chemicals. (6)

OIL-HYDRAULIC SYSTEMS and components for mobile equipment are described in an illustrated catalog available from *Vickers Incorporated.* The new catalog contains discussions of performance characteristics, design features, construction details, and applications for the Vickers line of single and double vane pumps, power packs for mobile equipment, multiple unit valves, relief valves, reservoirs, fluid motors, and power steering boosters. (7)

THE USE OF MULTI-PLATE and Liner Plate for aggregate tunnels is explained in an illustrated folder from *Armco Drainage & Metal Products, Inc.* Multi-Plate structures are said to provide an economical tunnel for aggregate conveyors, and Liner Plate tunnels offer a wide adaptability for installing gates and conveyor equipment. The folder includes installation photos and gauge tables. (8)

WESTERN MACHINERY COMPANY has released a condensed catalog presenting its complete line of equipment and services for mines, mills, and process plants. Included are descriptions of the principal units, with specifications as to sizes and capacities, and its laboratory testing services and engineering, design, and construction facilities. (9)

A PORTABLE PLANT HANDBOOK, published by the *Nordberg Manufacturing Company,* contains ideas for the design and construction of portable and semi-portable rock crushing and screening plants using Symons cone crushers and vibrating screens. The handbook includes engineering drawings for nine different types of crushing and screening plants, and specification sheets listing the equipment necessary to achieve various plant capacities. (10)

BULLETIN ED-12 discusses the *Fairbanks-Morse* electronic belt conveyor scale. With this conveyor scale, the load weight on a predetermined area of belt and the speed of belt travel can be measured simultaneously at any instant. These two measurements can be integrated and expressed in accumulated tonnage. (11)

STANDARD CONTAINERS for Series 3878 Load Lugger Models CH-300M and CH-400M, manufactured by the *Ingersoll Kalamazoo Division, Borg-Warner Corporation,* are of heavy steel plate, all-welded, watertight construction. A bulletin containing illustrations and descriptions of 15 types of containers, including tanks, pallets, and hoppers, gives specifications. (12)

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More Information, Please

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BERGSTROM CASTALOY SHAPED REPOINTERS are available from *Industrial Overlay Metals Inc.*, in either the BC type or the BC-G self-sharpening type. They are said to save 50 percent in time when used in rebuilding worn bucket teeth. No cutting of worn tooth or point is necessary to fit. Crescent-shaped weld eliminates stress concentrations. (13)

HOSE, FITTINGS, SOCKETLESS KITS, and self-sealing couplings are featured in an industrial catalog released by the *Aeroquip Corporation*. Designed for use in the replacement field, the catalog includes instructions for ordering, installation planning, and assembly of hose and fittings. (14)

PLICAST, a castable refractory material mide by the *Plibrico Company*, is shipped dry in moisture-proof bags. It is mixed with water on the job and poured into forms or molds, setting to concrete-like hardness without the application of heat. A bulletin contains descriptions and uses of 13 grades of castable refractory material. (15)

JAWMASTER CRUSHERS, produced in 13 sizes by the *McLanahan and Stone Corporation*, are described in a 4-page bulletin. Featured, in addition to technical details, are dimensional drawings, capacities, and tables for the 13 models. (16)

A 48-PAGE GUIDE issued by *John-Manville*, entitled *How to Install Johns-Manville Transite Pressure Pipe for Overhead Industrial Water and Process Lines*, lists suppliers of fittings, accessories, and couplings. The text is divided into 15 sections, covering such items as hanging and supporting the pipe, bracing for thrusts, the poured flange coupling, and the Roto-Split flange coupling. (17)

BULLETIN NO. 67 covers *Simplicity Engineering Company's* complete line of woven wire screens for repair and replacement. The methods used to fabricate wire screening to exact specifications are described, and sizes and types of woven screen now available for immediate delivery are listed. Screen edge types and designs are fully illustrated. (18)

THE TEREDO, a light, compact, portable core drill manufactured by *Acker Drill Company, Inc.*, is described in an illustrated bulletin. Specifications and capacities are included. The Teredo is a rugged drill of medium capacity for depths to 500 or 600 ft., and features 3-speed transmission, 24-in. travel which provides more footage per shift, and a gate head which swings aside to clear the hole. (19)

DESIGN FOR SUCCESS WITH NEOPRENE is the title of a booklet outlining the chemical properties and characteristics of the chemical rubber developed by *E. I. du Pont de Nemours & Company*. Uses for Neoprene include hose, pinch valves, gaskets, cable, and conveyor belts. (20)

THE ELECTRO-WAY, an electronically controlled continuous weighing system for the conveyor belt handling of bulk materials, is presented in a booklet offered by the *Bell Automation Corporation, subsidiary of the Bell Aircraft Corporation*. The Electro-Way is capable of three functions: measuring material conveyed; controlling total flow or flow rate; and maintaining accurate proportioning of multiple additives in continuous processing. (21)

CATALOG S-1, an 8-page, two-color Swaged Hose Assembly Catalog, is available from the *Weatherhead Company, Fort Wayne Division*. Catalog S-1 shows the complete line of Weatherhead swaged hose, hose ends, and adapters. Also featured is the swaged hose assembly numbering system, by which hose assemblies of any size, type, length, pressure, and quantity can be ordered quickly and easily. (22)

ANSWERS TO QUESTIONS ABOUT DIESELS is the title of a 24-page booklet just released by *Cummins Engine Company, Inc.* Fully illustrated, the booklet is designed to acquaint the reader with the basic principles of diesel operation. The questions presented are answered in simple, non-technical terms. (23)

A SERVICE MANUAL and parts list for the Gilson mechanical testing screen is now available from the manufacturer, the *Gilson Screen Company*. The new manual contains instructions for installation, operation, and maintenance of the Gilson screen, and a discussion of operation conditions. It also presents a complete parts list for convenient identification of additional or replacement parts. (24)

LINK-BELT BOOK 2457 contains information on *Link-Belt Company's* complete line of roller chain and sprockets. Sections on stock drives, installation and maintenance, lubrication, conveyor chains, casings, and other products are included. This 148-page book gives all the necessary information for choosing the right roller chain for a given application. (25)

AUGUST, 1956

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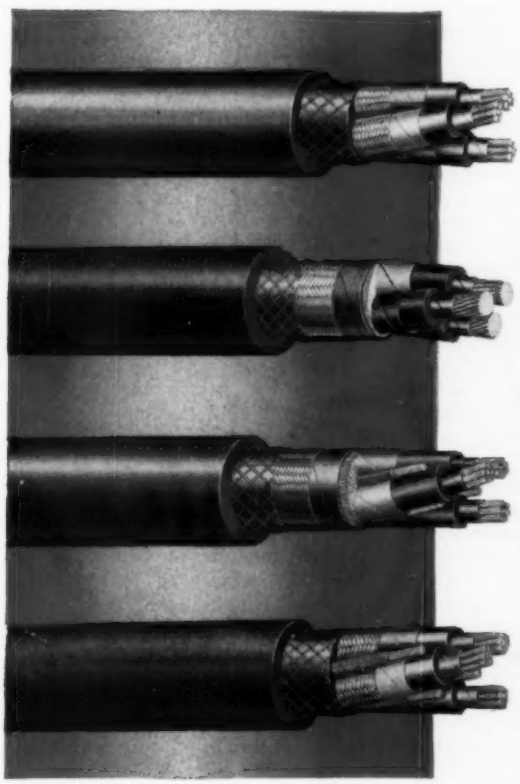

U. S. Royal SH-A Cables consist of three or four flexible coated annealed copper conductors covered with a semi-conducting tape. Each conductor is insulated with U. S Uskorona-1 oil base compound, and covered with colored tapes and a braided coated copper shield. The conductors are then cabled and covered with a reinforced jacket of 60% black neoprene. The shielded braid over each insulated conductor eliminates corona cutting by static discharge through equalization of surface stresses.

SH-B cables consist of three or four flexible coated annealed copper conductors covered with a semi-conducting tape. Each conductor is insulated with U. S. Uskorona-1 oil base compound plus colored tapes. Conductors are then cabled with jute fillers, covered with a rubber-filled tape, a braided coated copper shield and reinforced 60% black neoprene jacket. The shielding braid protects the men handling the cable in the event of fault currents.

SH-C cables consist of three or four flexible coated annealed copper conductors covered with a semi-conducting tape. Each conductor is insulated with U. S. Uskorona-1 oil base compound and covered with a colored tape. The conductors are cabled with jute fillers and with the specified fabric-covered ground wires in the conductor interstices; then covered with a rubber-filled tape, braided coated copper shield and a reinforced 60% black neoprene jacket. Ground wires permit grounding of equipment and provide an adequate low-resistance path for short circuits, thus insuring circuit breaker operation. The grounded equipment provides protection to workmen under fault conditions.

SH-D cables consist of three or four flexible coated annealed copper conductors covered with a semi-conducting tape. Each conductor is insulated with U. S. Uskorona-1 oil base compound and covered with a colored tape and a braided coated copper shield. The conductors, together with fabric-covered grounding conductors, are cabled and covered with a reinforced black 60% neoprene jacket. The conductor shielding, when properly grounded, equalizes surface stresses and draws off all capacity charging currents, insuring safety in handling. An adequate low-resistance ground for the equipment is provided by the grounding conductors.

All shields and grounding conductors, when used, should be properly and thoroughly grounded.

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A. T. Goldbeck makes last engineering director's report to

N.C.S.A. DIRECTORS At Lake Placid Meeting

By WALTER E. TRAUFFER

Another ON THE SPOT Report

THE summer meeting of the board of directors of the National Crushed Stone Association was held July 12 and 13, 1956, at the Lake Placid Club, Lake Placid, N. Y. The Executive Committee of the Manufacturers Division of N.C.S.A. also met on the morning of July 12. The location is one of great scenic beauty, and the club provides every comfort and diversion to be expected of an internationally famous resort. The attendance was good, and many members brought their wives and families. At the meetings many important matters of association business were discussed. It was also reported that since the last meeting the membership of N.C.S.A. had increased by 8 companies to a total of 150 members, and that of the Manufacturers Division by 2 companies to 111.

Coming Conventions With respect to the 1957 annual convention in Miami Beach, Fla., J. R. Boyd, executive secretary, reported a change in the hotels scheduled, but not in the dates, January 15, 16, and 17, 1957. The meeting is now scheduled for the Bal Harbour Convention Group at 98th and Collins Ave., just beyond the northern limit of Miami Beach proper. The hotels included are the Americana, Balmoral, Sea View, Colonade, Bal Harbour, Ivanhoe, and Kenilworth.

It was also decided that the 1959 annual convention would be held the week of February 8, 1959, at the Commodore Hotel, New York City. The 1958 annual convention and exposition, as previously announced, will be at the Conrad Hilton Hotel, Chicago, February 17 to 19. No action was taken on the mid-year directors' meetings in 1957 and 1958.

Administrative Director In his report J. R. Boyd, administrative director, described the other activities of the association, including not only the functional activities but also those of a special nature. With respect to the new Federal-Aid Highway Act, he told of the fight against including the Davis-Bacon prevailing minimum wage provision. The association's efforts did not fully succeed, but helped to bring about an interpretation that it was not the intent of Congress to have this provision apply to the production of materials off the site of the work. N.C.S.A., he said, also maintained its traditional position of recording a protest against the recent increase in railroad freight rates. Although this effort was not directly successful, it does provide member companies with excellent material for use at the state level in connection with intrastate proceedings. At this meeting Mr. Boyd was made executive director of the association, instead of administrative director as heretofore.

Engineering Director In his report to the board, A. T. Goldbeck, retiring engineering director, gave a comprehensive review of the work done by his department so far this year. He also summarized the work done over the years which has been so important to the members of N.C.S.A. and the crushed stone industry in general. He outlined a few of the problems which still confront the industry and some of the most important work which remains to be done. In closing, Mr. Goldbeck said that he would continue to serve the association in a constructive way as an engineering consultant.

In discussing alkali-aggregate reaction, he pointed out that the cure for it so far consists in using either a low-alkali cement or a pozzolanic admixture such as fly ash or certain heat-treated shales. But this does not help the producer who must compete with non-reactive aggregates.

Pavement slipperiness is another important problem which is yet to be fully understood. Mr. Goldbeck described briefly some of the work that has been done to solve the problem. He also gave a few broad general principles which should improve the non-skid characteristics of highways, as follows:

1. A sand-paper type of surface seems less slippery than one which includes large pieces of aggregate which may develop mosaic, polished surfaces.

2. A surface which will renew itself by wear seems desirable. Thus a sand-asphalt type, approaching a sheet asphalt but perhaps not so dense as sheet asphalt, may be desirable. A wear-resistant sand is desirable.

3. If a crushed stone has polishing characteristics, use it as both fine and coarse aggregate in the binder course and make this course thicker than usual. The surface course, however, should be proportioned with a small size of crushed stone coarse aggregate (say, not exceeding ⅜ to ½ in. in size) and the mix should contain less coarse aggregate and more hard sand particles than used in the past. Thus, less of the stone and more of the fine aggregate will become exposed, thereby approaching a sand-paper finish.

4. In connection with portland cement concrete pavements, it has been the custom so to proportion highway concrete that a very thin layer of mortar will appear on the surface. It has been observed that a siliceous sand mortar will not polish. Therefore, it seems logical so to proportion the concrete that there will be an excess of mortar which will come to the surface during the finishing operation. Now that air entrainment is used, excessive scaling of the surface should not result from this procedure. This method will be of no value with those natural sands or stone sands which will wear to a flat polished surface.

5. Concrete pavements which have become slippery can best be cured by the application of an appropriate bituminous treatment.

An impressive list was given of the laboratory projects carried on during the last year. Mr. Goldbeck also

described a number of the special activities which form such an important part of this work, including the Sixth Short Course held on December 6 to 9, 1955.

Field Engineer In his report, Joseph E. Gray, field engineer, summarized the results of his extensive travels to help members of the industry solve some of their problems. He briefly described three of the primary problems encountered. One of these was in connection with the use of crushed stone in base construction. At present, he said, the decision as to which aggregate will be used is based on the cost per ton at the job. He urged additional study on the relative merits of different types of aggregates in this work.

The use of crushed stone in bituminous concrete also involves a cost problem. Mr. Gray urged that research studies be made to determine the relative merits of the different types of aggregates in hot bituminous concrete, so that they can be evaluated by their true value instead of on a price basis.

Problems on the use of crushed stone in flexible base design and bituminous concrete are of primary importance, Mr. Gray declared, because of the increasing use of this type of road construction on the primary highway systems. He suggested that N.C.S.A. might develop a method of test for evaluating specific materials for use as road base as they are proposed for a given project. The laboratory, he said, is also well equipped to carry on research on bituminous concrete. In closing, Mr. Gray reviewed his many years of association with N.C.S.A. and his background leading up to his recent appointment as director of engineering.

Subrogation There was good news for the industry in the report of Warren C. Rowe, chairman of the Subrogation Committee. After reviewing briefly the past developments he had described at the February annual convention, Mr. Rowe stated that the progress since that time has been excellent and that the committee's objective is being realized. The big break for the industry, he said, was the general vibration conference in St. Louis in 1955, on which he had reported. The results of this conference and demonstration became evident early this year when many insurance companies began refusing to pay blasting damage claims or investigated them thoroughly before paying them.

In June of this year, said Mr. Rowe, the National Board of Fire Underwriters got out a proposed guide which he considers excellent. This guide has been submitted for suggestions before final publication and it is to be used by insurance companies, claim adjusters, and others. Blasting claims are given prominent treatment in it, and full acknowledgement is given to the importance of vibration experts and their evidence. This guide, he said, will insure decisions based on facts, and that is a real break for crushed stone producers. According to Mr. Rowe results are already evident in the easing off of claims and the resultant saving in legal fees.

Other Business The present status of percentage depletion was described by Russell Rarey, chairman of the Percentage Depletion Committee. There are, he said, no problems at this time and no legislation is under consideration in Congress. The only current problems are individual ones which can best be handled by company counsel. He also commented on the decision of the Virginian Limestone Company case, a victory for the industry.

Wilson P. Foss III, chairman, reported that the work of the Public Relations Committee is progressing satisfactorily. He also expressed his willingness to be a delegate for the industry at the National Waterways Conference, and was authorized to do so. This conference was formed to oppose the Hoover Committee's recommendation that tolls be charged to waterway users in order to equalize the treatment of rail and water haulage.

Slight Increase Reported In '55 Iowa Mineral Output

In 1955, the value of minerals produced in Iowa totaled $61,300,000, about 2 percent greater than in 1954. Most of the minerals produced showed gains over 1954, although stone and sand and gravel registered slight decreases.

Minerals used in building and highway construction accounted for over 90 percent of the Iowa total.

The leading nonmetallic minerals, in order of value, were cement, stone, sand and gravel, crude gypsum, clay and lime.

Mineral fuels produced were bituminous coal and peat. Coal production in 1955 was estimated to be about 3 percent greater than in 1954.

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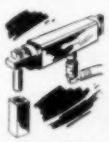

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or the Type LSRR for applying the brute force necessary to shake a railroad car . . .

and construction men find the Type VG settles the concrete better in a form or mold — the foundryman draws his patterns quicker.

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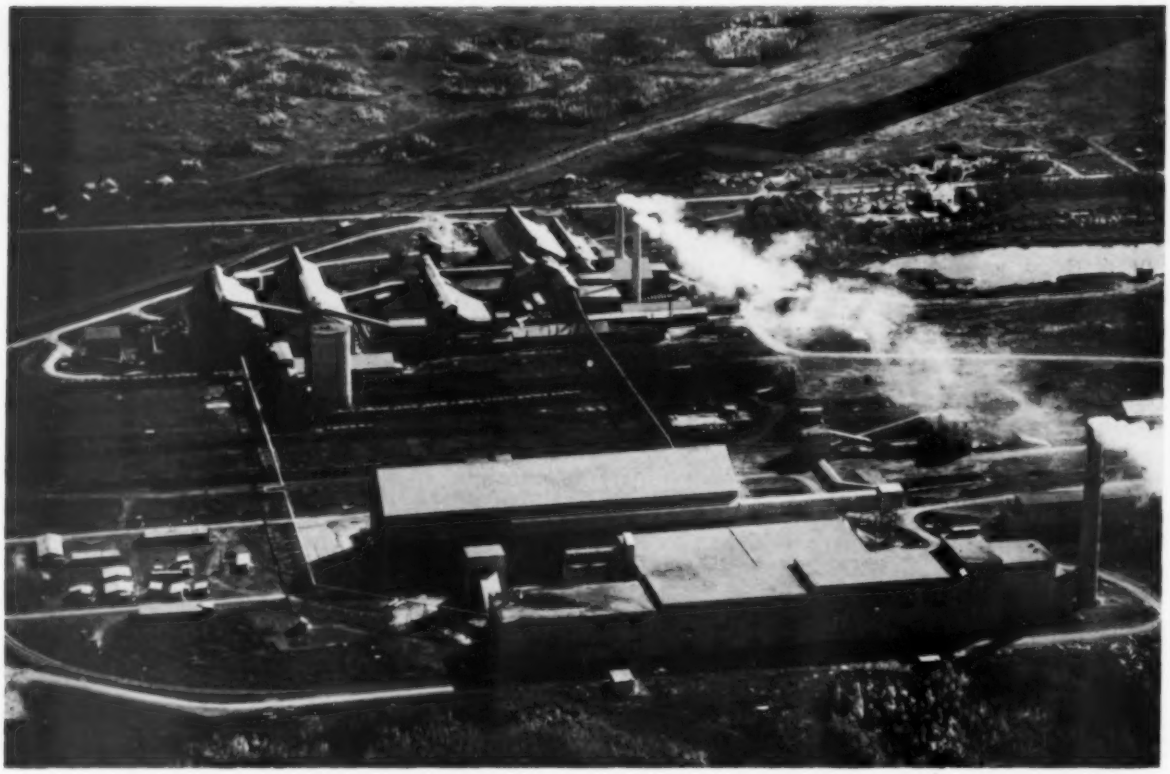


Canada Cement Company's operation at Fort Whyte, Manitoba, shows the old plant (background) and the new facilities (foreground).

Canada Cement Expands

with erection of new facilities beside old plant at Fort Whyte

By A. S. DIES

Technical Supervisor of Operations
Canada Cement Company Limited
Montreal, Quebec

Another P&O Exclusive

IN 1911 the Canada Cement Company Limited built a clinker storage, a grinding mill, and a cement stockhouse at Fort Whyte, Manitoba, about 9 miles southwest of Winnipeg. Clinker made at one of the company's plants near Belleville, Ontario, was shipped 1,100 miles by water to Fort William, Ontario, and thence 400 miles by rail to Fort Whyte, Manitoba. The plant was operated by electric power purchased from the Winnipeg Electric Company.

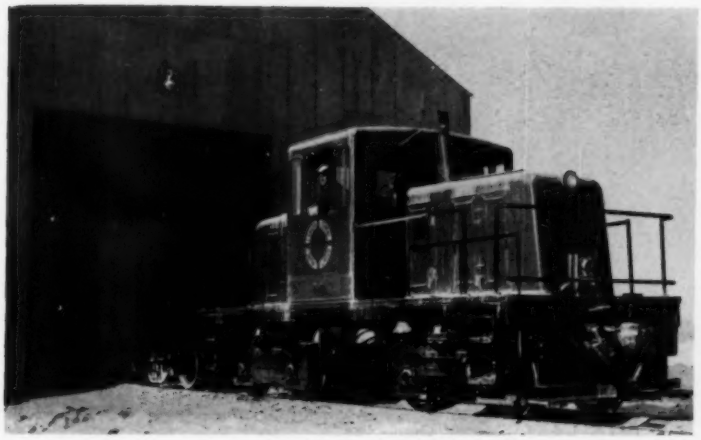
After operating in this way for about two years, the plant was completed by the installation of four 10- by 150-ft. rotary kilns, together with the necessary drying and raw grinding equipment. Limestone was brought by rail from Steep Rock, about 158 miles north of Winnipeg on the east shore of Lake Manitoba, where a quarry was opened and a crushing plant erected. Clay was obtained on the plant property at Fort Whyte. The kilns were operated on the dry process with coal firing.

The plant was changed from dry to wet process in the winter of 1928. The four, 10- by 150-ft. P & M kilns were rebuilt to make two 10- by 278-ft. kilns, each having a rated capacity of 1,800 bbl. per day. Production has subsequently been increased to an average of 2,250 bbl. per day for each of these old kilns.

These four kilns are equipped with Unax coolers. They were coal fired until late in 1951, when they were changed to oil firing, using a Bunker C oil. When the kiln in the new plant was placed in operation in June, 1955, the original kilns were again coal-fired, the new kiln using all the available supply of oil.

The dry raw-grinding department, consisting of No. 85 Kominuters and No. 20 F.L.S. tube mills, was converted from dry to wet grinding. No. 85 Kominuters and No. 18 F.L.S. tube mills in open circuit are still used for clinker grinding.

The decision to enlarge this plant was made late in 1953 and construction commenced early in January, 1954. A completely new site, adjoining the old plant, was selected to assure ample space for future enlargement of the new plant when the old equipment would eventually be abandoned.



This 50-ton diesel-electric locomotive pulls cars to the car dumper (background).

Raw material is unloaded from 50-ton cars by the dumper, which can handle 365 t.p.h.

GENERAL DESIGN CONSIDERATIONS

Two unique factors peculiar to the Winnipeg area had a considerable influence on the design of the new plant — these being foundation conditions and climate.

The gumbo clay in this area has a very low load-carrying capacity, and an extensive test boring program was required before the start of construction in order to verify the distance from ground level to a layer of hardpan and to bedrock.

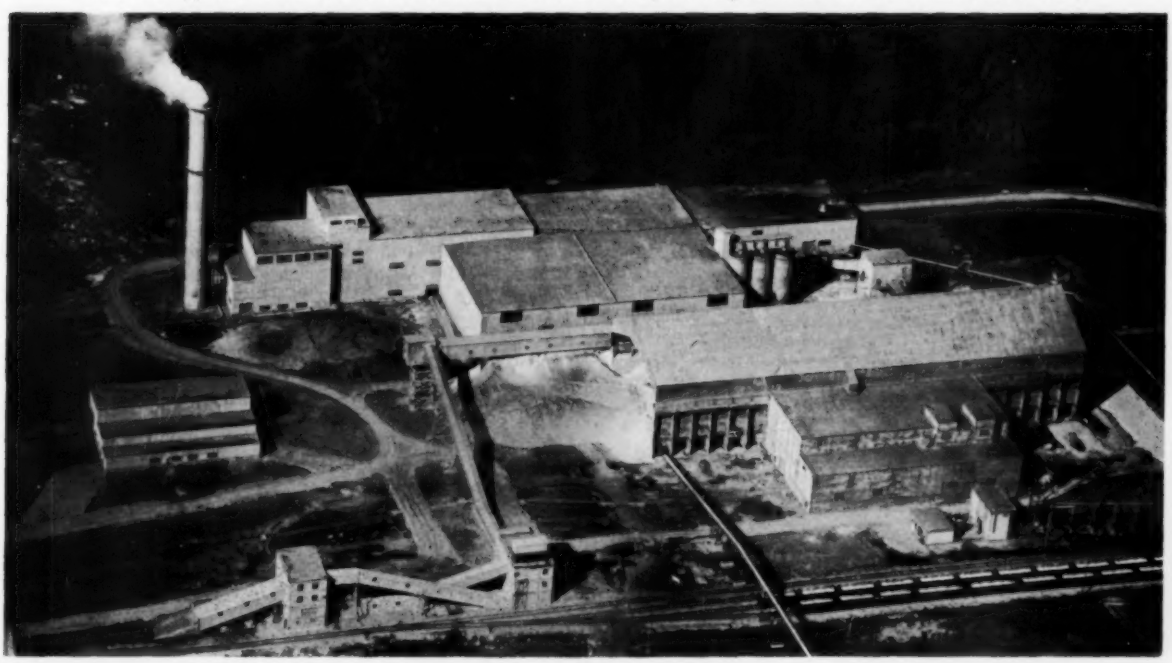
The hardpan occurs at a depth of from 38 to 42 ft., and a dolomitic limestone bedrock occurs at a fairly uniform depth of 58 to 60 ft.

No friction piles were used. All loads of any magnitude were carried by straight bearing piles on the hardpan or bedrock. Heavy loads, such as mill piers, kiln piers, storage basins, and mill storage walls were carried on 4- or 5-ft. diameter reinforced concrete piles bearing on the bedrock. These were hand excavated by experienced muckers, and the timber caissons were left in place when the piles were poured. This method proved economical and satisfactory in all respects.

Smaller loads, such as building superstructures and conveyor bridges, were carried on 2½- or 1½-ft. diameter piles bearing on the hardpan layer. These were excavated from the surface with a mechanical "wiggletail" auger. Most of the piles were placed during the winter of 1954.

The climate of the area poses particular difficult problems not normally encountered in many parts of North America. During the winter, in addition to a normal snowfall of 4 ft. (over 7 ft. during the winter of 1955-1956), temperatures often range more than 20 deg. below zero for several consecutive days and sometimes as low as 40 below. This requires that all buildings be covered, including conveyors, storages, and kiln. Particular care is required to prevent freezing of water lines and drains. Conveyor belts must be left running during week-ends. Special lubricants must be used. At less

From the opposite direction one has an excellent view of the new plant's layout. Note that all facilities are covered.



In a large open pit

"New Bonus-Powered International gives work-speeding capacity . . . new

Eighteen tons of shot-rock ride fast from pit to crusher in the "room-sized" body of this new International Payhauler® — for a Virginia limestone quarry operator.

These huge new off-highway haulers are built for speedy rock and ore transport over rough terrain. An International Payhauler has more turbo-charged diesel hp per struck yard, greater frame strength and shock-protection, than any other same-sized hauler!

Both the 18-ton Model 65, and 24-ton Model 95, are power-steered, and power-dumped, with top operating comfort.

"No busy season downtime," says Ralph Jordan, crusher superintendent, Asphalt Paving Company, Wheatridge, Colorado —of International Power Unit performance. "I prefer Internationals—they're easiest to maintain." A Model U-450 powers their hot-mix plant and a UD-1091 powers the crusher with a capacity of 1,500 tons of gravel daily!

Five yards of sand every 90 seconds is the loading rate for Lynch Gravel Co., Detroit, with this new bonus-powered TD-9 Skid-Shovel. Exclusive 41° bucket roll-back and non-spill level-lift action help heap the bucket and "keep the heap."

Equipment... operating ease!"

Prove how a Payhauler can increase your production, give *new* cost-control.

Ask for a demonstration of the International equipment you need!

See you at
the ROAD SHOW—CHICAGO
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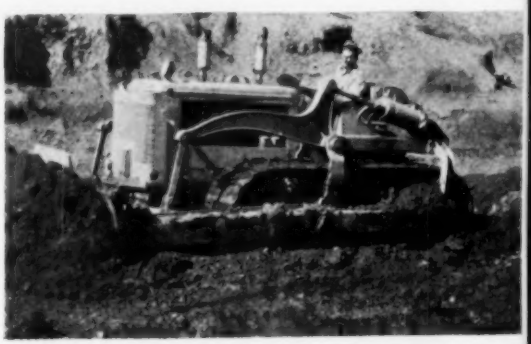
In a large open pit copper mine this TD-24 levels rock "spoil," to aid low-cost disposal. These "rock-busters" open new levels, bench-out access roads, move railroad track, clean up after blasting. "Live" turning power on both tracks with exclusive Planet Power steering, gives amazing *tough job control!*

Bowl-boiling action, turbo-charged diesel power back International Payscraper production of *3.7 loads per hour on 1.8 mile cycle*—uncovering Indiana limestone. Heap-loaded in 30 to 44 seconds, in 50 to 75 feet, "pushed" by TD-24, the Payscraper takes off in "high!"

A key manganese producer strips 25 feet of overburden from a rich ore deposit—with new bonus-powered International crawler-dozer outfit — helping maintain 1200-ton ore production per 8-hour day. "Tough work, and the International equipment has performed and held up very satisfactorily," reports the mining company.



Opening a cut 100-120 feet wide, this TD-24 dozes its loads 150-175 feet, exposing a 32-ft. limestone ledge at Mulzer Brothers Quarry, Tell City, Ind. Planet-Power steering often enables the TD-24 to operate a gear faster than rival crawlers on heavy dozing!

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severe, but still cold weather, condensation may become a problem, particularly in electrical equipment. Auxiliary heat is required in a number of buildings. This is provided by unit forced-air oil-fired heaters.

In the summer, temperatures of 80 or 90 deg. for extended periods are not uncommon, and ventilation of some areas becomes a problem, such as the kiln building, or mill motor room. Removable panels or adjustable louvres are used on a number of the buildings. There is a generous number of large doors.

The layout of the new plant is a compact, parallel design of almost square dimensions, with ample provision for future expansion. Because of the foundation conditions, the mill storage is relatively short and high, slurry and clay storage basins are single and large in diameter, and the kiln building will accommodate an additional kiln. Major buildings have steel superstructures, with corrugated asbestos-cement siding and precast concrete roofs covered with tar and gravel. The mill storage has a pitched roof of corrugated iron and completely open ends. Altogether, about 59,000 cu. yd. of concrete was poured for the construction of the plant.

RAW MATERIALS

Limestone is quarried at Steep Rock, Manitoba, and shipped by rail 158 miles to the plant. Clay is available at the plant. Iron cinders must be shipped in from Eastern Canada; sand is secured locally.

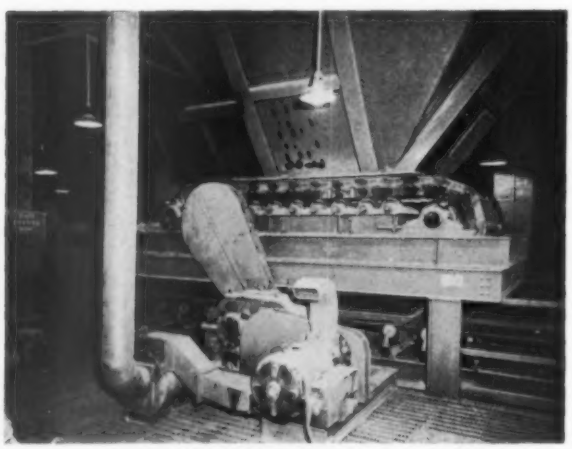
Steep Rock Quarry High-grade limestone of the Elm Point formation (Devonian) is in ample supply, and the overburden depth ranges from a few inches to 3 ft. The floor of this quarry has a high magnesia content.

Coincident with the start of the new cement plant, secondary crushing was moved from Steep Rock to the plant. Such a move was dictated partly by the fact that the company generates its own electrical power with diesel engines at Steep Rock and partly because freezing of crushed limestone in transit is minimized with shipment of the larger primary crusher product.

Equipment at the Steep Rock quarry consists of one 54-B Bucyrus-Erie 2½-cu. yd. shovel and one 85-B Bucyrus-Erie 3¼-cu. yd. shovel; three 49 FD and two 82 FD 15-ton Euclid trucks; one Joy Heavyweight Champion rotary dry drill, model 58 BH, which drills 6¾-in. diameter holes and has a bit life of up to 5,000 ft.; a 30- by 60-in. 300 t.h.p. Fairmont crusher; and a 50-ton C.G.E. diesel-electric locomotive for switching the railroad cars.

A small, but well-equipped machine shop is a part of the primary crushing plant; and work which may not be handled on the site is taken care of at the cement plant shop.

At present, a 54-in. Traylor gyratory crusher is being installed at the Steep Rock quarry. This unit will replace the existing Fairmont roll crusher.



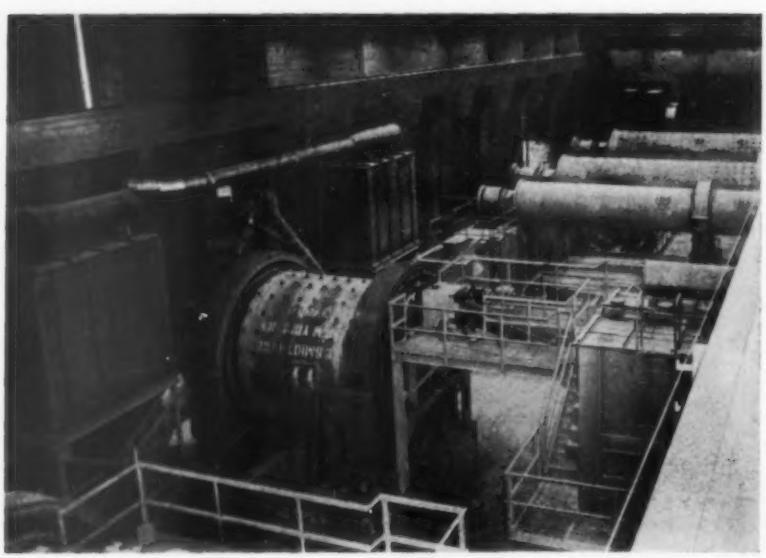
This pan feeder conveys stone from the car-dump hopper to the 42-in. shuttle belt conveyors. Note the ventilator for the motor.

Unloading and Handling Limestone, sand, and iron cinders, shipped in standard 50-ton gondola cars to the plant, are unloaded by a 60-ft. Wellman car dumper into two hoppers below. Unloading time is less than five minutes per car including "spotting." Up to 365 tons of limestone can be handled per hour by the system; but should the secondary crushing be doubled at a future date, the car dumper will handle 730 t.p.h. quite easily.

Limestone is fed from the hoppers under the car dumper by two 60-in. Stephens-Adamson apron feeders onto two 48-in. shuttle belts. The apron feeders are adjustable in speed from 5 to 10 f.p.m., and the motors are force-ventilated with outside, filtered air.

The shuttle belts feed onto a single 42-in. belt. and the stone passes from the dumper building to the secondary crusher building. Provision has been made for a second 42-in. belt if plant capacity should be increased. At this time the shuttle feature of the 48-in. shuttle belts would be utilized to feed either belt as desired.

In the secondary crushing building a Pennsylvania CF-15-50 reversible



A view in the mill building shows the sand mill (foreground), the raw mills, and the dust collectors.

Impactor reduces the limestone to about minus one inch. It is driven by a C.G.E. reversible 600-hp., 4160-volt wound-rotor motor, totally enclosed and force-ventilated with outside filtered air. The building is vented by a Norblo dust collector.

Stone from the Impactor is carried on a 42-in. belt to the screen house, where it is delivered to two 60-in. by 14 ft. model 70 Dillon vibrating screens.

Screen tailings are returned to the Impactor *via* a 36-in. belt, and the minus ½-in. screen product is carried to a transfer tower adjacent to the mill storage on a 36-in. belt. The screen building is vented with a Norblo dust collector.

Full provision has been made for doubling the capacity of the secondary crushing and screening facilities without extending the present buildings. Sand and iron cinders by-pass the Impactor and screens, and are transported directly to storage by the same conveyor system as the limestone. Air-operated head gates are used at the crusher and screens to insure easy switching to by-pass service.

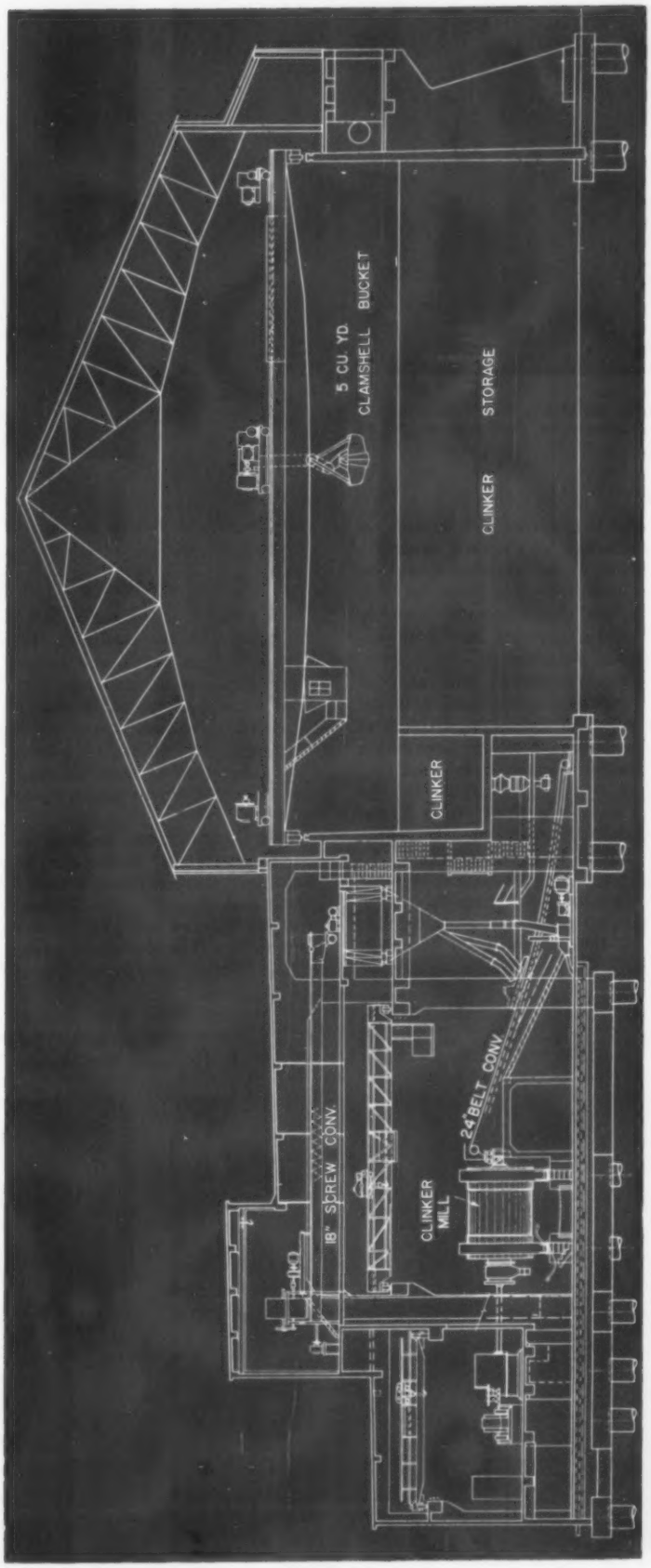
A 42-in. belt carries the raw materials along one of the storage walls, where a Stephens-Adamson tripper spotted by a separate drive places the cinders, sand, or limestone in the appropriate parts of the storage.

MILL STORAGE

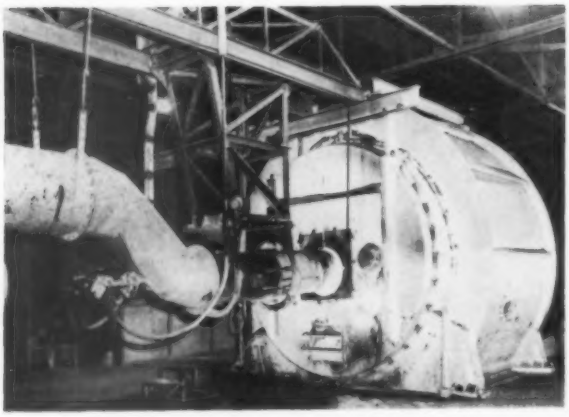
The mill storage is 130 ft. wide between roof columns by 404 ft. long. The main storage walls are 120 ft. apart and are 47 ft. 6 in. high to the base of the crane rails. Interior bin walls are all 31 ft. high. Separate storage areas are provided for limestone, sand, iron cinders, gypsum, and clinker. The limestone and clinker storage areas take up most of the space, being 100 ft. wide by 152 ft. long each. Both can be extended to adjacent outdoor storage through the open ends of the storage building. The iron cinders storage occupies a corner of the limestone storage on the belt side of the storage building. Sand and gypsum storage spaces are each 50 ft. long by 100 ft. wide.

Storage capacities are as follows: limestone, 24,000 tons without outside storage; sand, 7,800 tons; iron cinders, 1,000 tons; gypsum, 7,800 tons; clinker, 135,000 bbl. without outside storage.

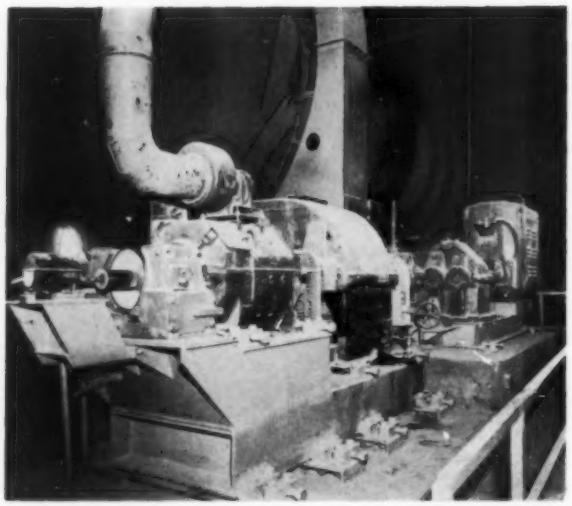
A row of 19 feed bins occupies the remaining 20 ft. of width between the main storage walls; these extend the full length of the storage building. Only nine of these bins are adjacent to the present mill building, seven of which are currently in serv-



An end elevation of the clinker storage and finish milling department at Canada Cement's recently expanded Fort White, Manitoba, operation.



The firing end of Kiln No. 4. Note the size of the primary air pipe required for oil firing.



The Kiln No. 4 drive, which uses a mill type motor and forced ventilation. Note the emergency gasoline engine (background).

ice. The two spares will be used in the production of masonry cement.

The bin at the extreme limestone end is used to feed a 24-in. by 897-ft. long belt, which provides a supply of limestone, gypsum, and iron cinders to the old plant.

All the remaining bins are for future expansion and, along with the adjacent mill storage, were built at this time because of the foundation conditions previously mentioned.

All material is moved within the storage area by a 120 ft. span 20-ton Provincial Engineering travelling crane with a 5-cu. yd. clamshell. All motors are Ward-Leonard system, which provides an extremely smooth and fast operation, with no sudden jerks or shuddering stops generally associated with regular a.-c. motors. The operator's cab is heated and air conditioned.

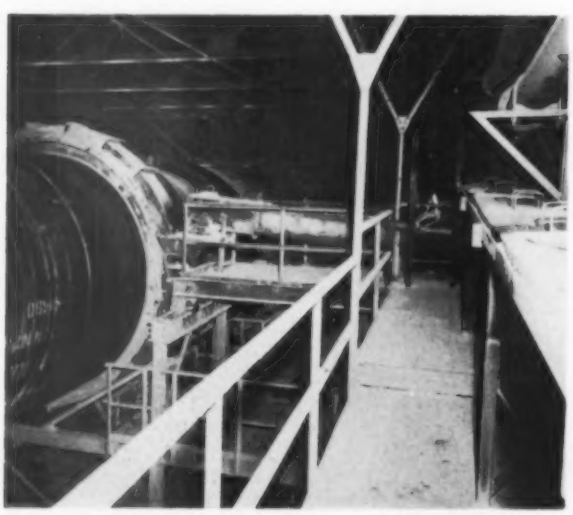
CLAY HANDLING

The clay pit is located about one-half mile from the washmill. It averages 40 ft. in depth, and the excavation provides a small lake for the plant water supply, except that used for drinking, which is secured from Winnipeg city mains. Underwater clay excavation is accomplished by means of a Bucyrus steam-operated drag-line.

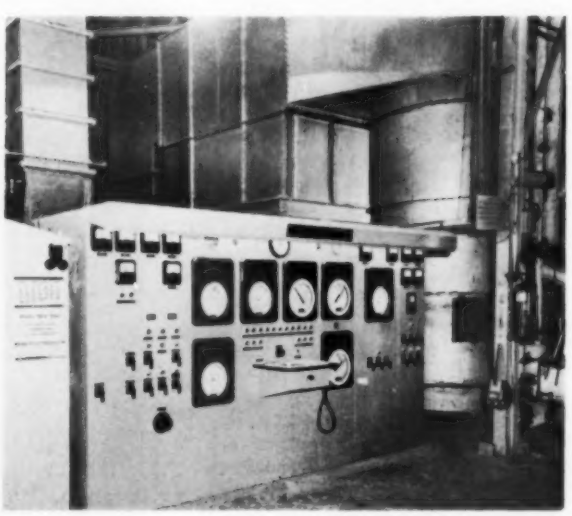
The clay washmill building is located separately from the other buildings. Clay is brought from the pit in self-tipping, side-dump clay cars by means of gasoline-driven locomotives. The material is unusually sticky, and has proven very difficult to handle.

A 3½-ton, 33-ft. 6-in. span overhead crane with a clamshell bucket is used to facilitate the feeding of the clay; and high-pressure water washes the clay into the mills. Each of the two washmills is 29 ft. 6 in. diameter by 10 ft. deep, and is lined with granite paving blocks. Drags and framing are F. L. Smidth, and the mills are driven by 200-hp., 600-r.p.m. vertically-mounted motors, 735-to-1 reducers, and pinion and gear. Each mill is equipped with four gratings having 1¼- by 3/16-in. openings. The clay slip, containing about 68 percent water, is pumped by 6-in. Wilfley pumps to the clay storage basin. Clay is processed on a dry basis in each mill at about 31 tons per hour.

Kiln No. 4 dust return scoops and conveyors below the kiln chain section.



Operation of Kiln No. 4 is regulated by means of this control panel. At the right are some of the oil control valves. The dust collector is in the background.



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Clay Storage Basin The clay basin and the slurry basin are located adjacent to the kiln room under the same roof but in separate rooms. The clay basin has a 110-ft. inside diameter and an inside height of 21 ft. 6 in. It is built of reinforced concrete. Agitation is by an F. L. Smidth rotating travelling agitator, supported on a reinforced concrete center pillar, and a rail on the outside circular wall. Compressed air is supplied from a Fuller rotary compressor mounted on the agitator. Basin capacity is 200,000 ft., which is equivalent to 2,200 tons of dry clay.

MILL BUILDING

All raw material and clinker grinding is done in a common mill room. Mill motors, starters, and reducers are all located in a separate motor room. A 10-ton, 50-ft. span service crane with travelling control cab is provided over the mills, and a 10-ton, 30-ft. span, floor-operated service crane in the motor room. There is also a service elevator in the mill room.

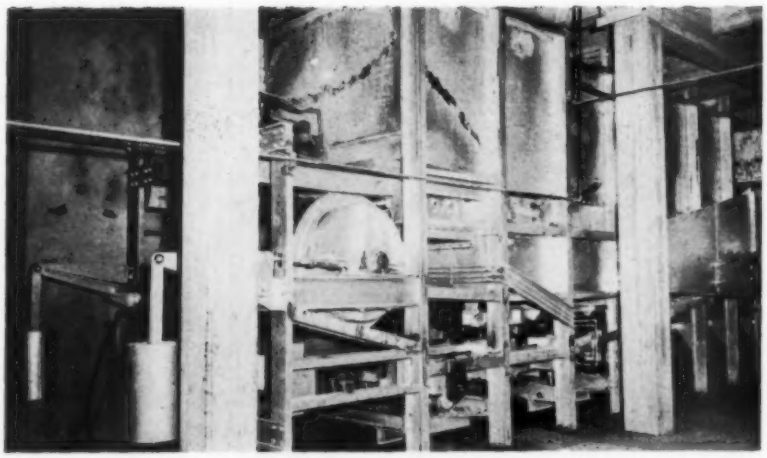
RAW GRINDING

Sand is drawn from the feed bin by a rotary feed table. The amount of feed is governed by the blade setting on the table, and the feed is transferred to the sand mill by a 20-in. belt. The F. L. Smidth Unidan mill sand mill is 6 ft. in diameter by 36 ft. 2 in. long, with a slide shoe at the inlet end and trunion bearing at the discharge or drive end. There are two compartments with wave linings, and the charge is as follows: 6,000 lb. of 1½-in. plus 15,000 lb. of 1-in. balls in the first compartment, and 51,000 lb. of 1-in. in the second compartment.

Sand mill product contains about 42 percent water, and is 85 per cent minus 200-mesh. Production is at the rate of about 10 t.p.h. It is pumped by 3-in. Wilfley pumps either to the main 22-ft. inside diameter by 42-ft. 6-in. sand silo, or the 19-ft. inside diameter by 42-ft. 6-in. auxiliary silo. Both silos are located near the feed end of the raw mills. Air agitation is provided by a Fuller rotary compressor at each mill.

The sand mill is powered by a 400-hp. 720-r.p.m. 4,160-volt synchronous motor and a Hamilton reducer with a 29.117-to-1 ratio, driving the mill at 24.75 r.p.m.

Limestone, sand slurry, iron cinders, and clay are fed to the two raw mills in about the following proportions, by dry weight: limestone, 75 percent; sand, 5 percent; iron cinders, 1 percent; and clay, 19 percent.



This view of the feed end of the cooler shows the weighted takeup for the dragbars.

Limestone is fed from the storage feed bins by rotary feed tables to 20-in. mill feed belts. Iron cinders drawn from a storage feed bin are fed onto the feed belt by a small apron feeder. Feed is varied by an adjustable gate and a ratchet drive on an adjustable eccentric.

Clay slip is at present pumped by 3-in. Wilfley pumps at the clay basin to ferris wheel feeders at the clay basin. The ferris wheel feeders are driven by variable-speed 833 to 2,500 r.p.m. motors controlled from the raw mill control panels. Overflow is returned directly to the clay basin, and the feed is pumped by 2-in. Wilfley pumps overhead to the mill storage, through a tunnel under the storage, and directly to the mills. Various factors such as freezing of lines, time lag in clay feed and adjustments, and remoteness of ferris wheel feeders from the miller has shown this system to be rather unsatisfactory. The ferris wheel feeders will very shortly be moved to a new location in the raw mill, and overflow from them will then be pumped back to storage.

Sand is fed from the sand slurry bins by 2-in. Wilfley pumps to overhead ferris wheel feeders of the same design as the clay feeders, which discharge directly to the raw mills. Overflow is returned by gravity to the sand slurry silo.

Any water in addition to that contained in the clay and sand slurries is introduced at the feed end of the raw mills.

The raw mills are F. L. Smidth No. 2414 Unidans, 7 ft. 10 in. diameter by 46 ft. long. Slide shoe bearings support the feed ends, and No. 826 trunnion bearings the discharge or drive ends. Each is driven by a 1,000-hp. 720 r.p.m. Canadian Westinghouse (4,160-volt) synchronous motor and F. L. Smidth TS-1150 Symetro reducer, to rotate the mill at 20.3 r.p.m.

The mills have a wave lining and carry the following ball charge: 17,000 lb. of 3-in. balls, 14,000 lb. of 2½-in. balls, and 14,000 lb. of 2-in. balls in the first compartment; 26,000 lbs. of 1½-in. balls and 14,000 lb. of 1¼-in. balls in the second compartment; 67,000 lb. of 1-in. balls and 22,000 lb. of ¾-in. balls in third compartment. Current output is about 130 bbl. per hour at a raw material dry weight of 570 lb. per barrel. It is expected that this will be improved at least 10 percent. Slurry moisture is about 38.2 percent, and 91 percent of the raw material passes a 200-mesh sieve. Slurry is transported by 6-in. Wilfley pumps under the storage and overhead to the correcting silos, located adjacent to the kiln room and clay and slurry basins.

All raw mills and auxiliaries are started and controlled from central panels located close to each mill. Inching controls are provided for spotting mills for charging or inspection.

SLURRY CORRECTION AND STORAGE

There are six correcting silos, each 20 ft. in inside diameter by 60 ft. high. Usually four of these are used for holding slurry until it is tested. After lime, moisture, and fineness determinations are completed, slurry from the remaining two silos is withdrawn by gravity to a sump for transfer to storage. This slurry is spread over the surface of the material in the storage for thorough, rapid mixing. Each silo is equipped with a Foxboro level recorder, which operates on the hydrostatic head of

slurry above a diaphragm, but these have proven rather difficult to calibrate satisfactorily. The recorders are grouped at the silo discharge valves to the sump pump, and are intended for use by the pumpman when withdrawing slurry from the various silos.

Wilfley 8-in. pumps are used for pumping slurry from silo to silo, if required, and from the silos to the slurry storage. Agitating air for the silos is supplied at 40 p.s.i. by two Chicago Pneumatic 15- by 11-in. Class T-BXCP compressors. There is also a service elevator at the silos.

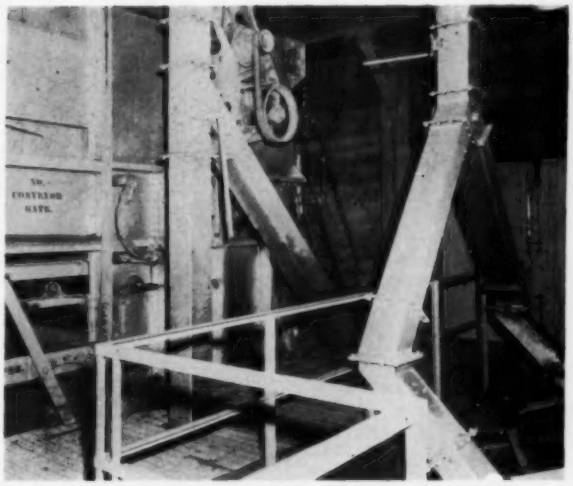
The slurry basin is identical with the clay storage basin; it holds all slurry that has been corrected and is ready to be fed to the kiln. Its capacity of 200,000 cu. ft. amounts to about 22,000 bbl. of slurry, a little over four days' supply for the kiln.

Four large ventilating fans circulate air from the kiln room in cold weather to prevent condensation and freezing troubles.

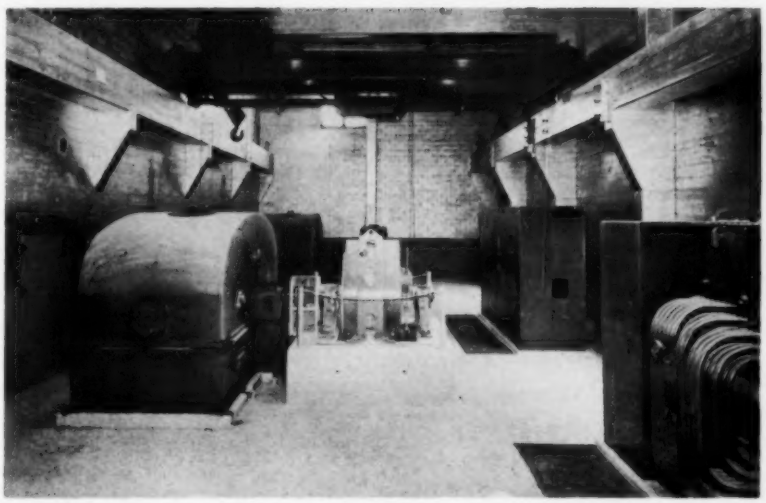
KILN

The F. L. Smidth kiln—12-ft. inside diameter by 450 ft. long—is supported by six piers at a slope of ½ in. per foot. The kiln is driven by a C.G.E. mill-type motor and an F. L. Smidth gear box. A mill-type motor was chosen here to provide maximum ruggedness and rapid removal of the armature in this vital drive application. It is forced-air cooled with a filtered air supply. Speed change is accomplished by Ward-Leonard variable-voltage control from a motor-generator set nearby and a rheostat at the kiln control panel on the kiln operator's platform. The slurry feeder is controlled by the same rheostat from another generator on the same motor-generator set.

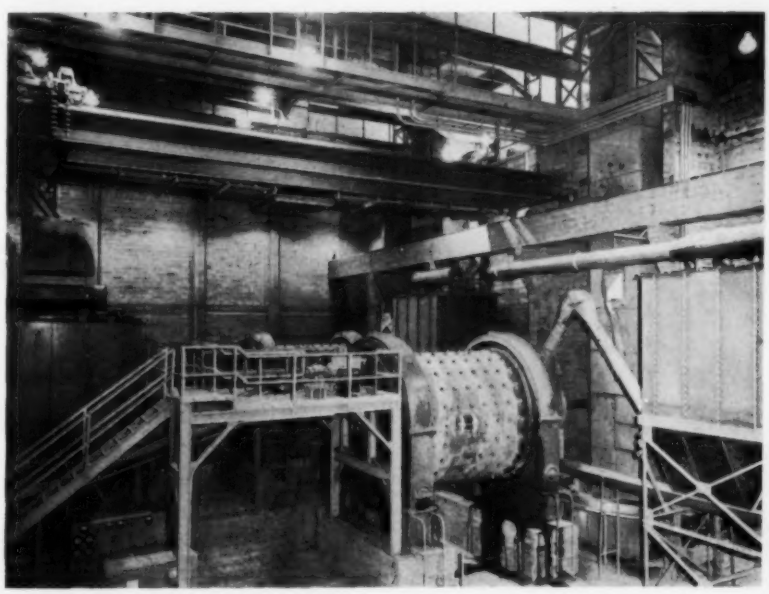
The kiln feeder is supplied from the slurry basin by 6-in. Wilfley pumps, and overflow is returned directly to the basin by overhead line. The feeder is of the ferris wheel type, and its speed bears a fixed ratio to the kiln speed in order to maintain a constant load in the kiln at normal kiln operating speeds. Feed to the kiln is varied by an adjustable splitter plate which directs more or less slurry to the kiln side of the feeder. A separate measuring pot can be cut into the feed pipe circuit to the kiln, thus determining the quantity of slurry per revolution of the feeder. The total revolutions of



The discharge end of the clinker cooler, showing the clinker breaker (top, center). The chutes come from tre primary air cyclone and the dust collector.



The mill motor room contains these 1,000-hp. 4,400-v. synchronous motors and drives for two clinker ball mills.



In these two 11- by 15-ft. 6-in. finish mills the clinker is ground. The mills are driven at 18.4 r.p.m. by the motors in the picture above.

CEMENT CORPORATION

AGAIN... PENN-DIXIE

CHOOSES KENNEDY MACHINERY &

this time, for their Des Moines, Iowa plant...

Overall view of Penn-Dixie Cement Corporation plant at Des Moines, Ia.

Send for Bulletin describing KVS Cement Machinery and Equipment

KENNEDY-VAN SAUN

MANUFACTURING & ENGINEERING CORPORATION

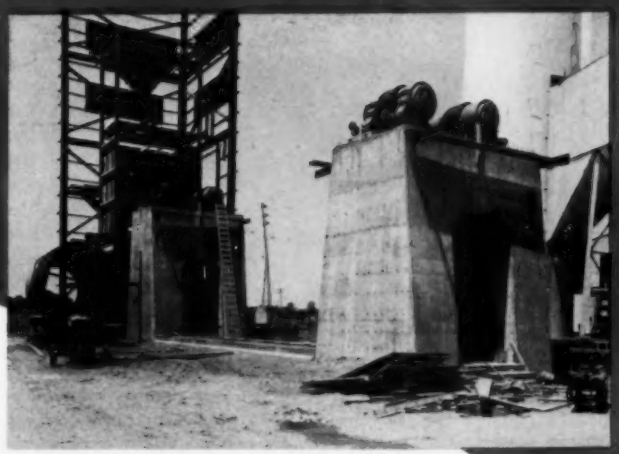
TWO PARK AVENUE, NEW YORK 16, N.Y. • FACTORY, DANVILLE, PA.

CEMENT CORPORATION

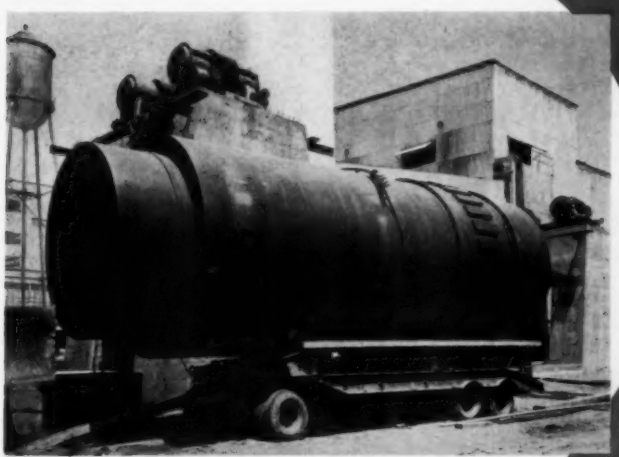
EQUIPMENT...

NEW EQUIPMENT WILL INCREASE PRODUCTION 70%!

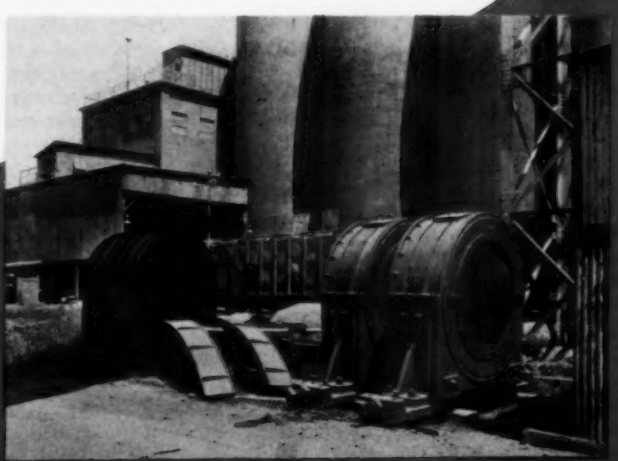
As part of a major program of production expansion, Penn-Dixie Cement Corporation are now installing Kennedy Cement Manufacturing equipment at their Des Moines, Ia. plant which will increase present capacities by 70%. A similar installation at the Penn-Dixie Petoskey, Mich. plant also increased production by over 54%. All equipment was chosen on a basis of proven performance.



Concrete piers, with Rotary kiln carrying Rollers for installation of KVS 11′ x 375′ kiln.



Feed End Section of Kennedy 11′ Diameter Rotary Kiln.



Mill Bearings for 11′ 6″ x 18′ AVS Finished Grinding Mills.

PORTLAND
PENN-DIXIE
CEMENT

the feeder are recorded at the kiln control panel, and in this way an accurate calculation of kiln production for any particular period is made.

In its burning zone the kiln is lined with 9-in. Magnecon basic brick, followed by 9-in. 70 percent alumina. There is a section of 6¾-in. insulating refractory brick over the drive gear, then 50 percent alumina brick, then another section of the insulating brick, and finally wear-resistant brick in the chain system at the feed end of the kiln.

Originally the chain system was placed in a conventional pattern, using 1-in. circular link chain at the feed end of the system and ¾-in. circular link chain for the remainder of the system, all at 54 chains per circle. This arrangement was found to cause the plastic slurry at this plant to dam up in the chains and overflow the feed end of the kiln. Half of the chains were removed, so that there were only 27 chains per circle, but the trouble persisted, although to a lesser degree. Finally the whole chain system was stripped out, more attachment rings were welded to the inside of the kiln shell, and ¾-in. oval link chains were installed on the new F. L. Smidth "Valby" system. There are now twice as many circles of chains in the same length of kiln, but only half as many chains per circle (in this case 27) as in the conventional system. The result is the same total number of chains as the conventional system, but a lower curtain density at any given cross-section of the kiln. This system has proved much more satisfactory; and since it was installed, only one mud ring has occurred in the chain system of the kiln. Feed end temperature has been raised above 800 deg. F. with this ring formation, and this step appears to have corrected the trouble.

Bunker C fuel oil is used to fire the kiln. This oil is from two storage tanks—each of 250,000 Imperial gallons' capacity—located on the far side of the old plant. Oil heated to approximately 130 deg. F. by steam from one of two 100-hp. Superior steam generator package boilers is pumped by Sier-Bath gear pumps through a 5-in., 1,400-ft. long overhead line to the new kiln building. Steam, condensate, and oil return lines are carried on the overhead bridge in the same insulated covering. Oil reaches the kiln building at about 100 deg. F. and 30 p.s.i. pressure, regardless of the season. An oil heating and pumping unit reheats, filters, and pumps the oil to the kiln oil gun. Oil not used is returned from this point, so that there is no chance of cold oil plugging the lines. Steam condensate is monitored by an electric eye, which sounds an alarm if any oil contamination is detected.

Oil reaches the gun nozzle at a temperature of 225 deg. F. and 225 p.s.i. pressure and is used at the rate of about 22½ imperial g.p.m. The oil gun nozzle is located in the center of the blast pipe and about 2 in. inside the end. The nozzle tip has only one hole, the oil being controlled by a needle valve operated by a handwheel on the operator's platform. A spirally-machined fitting inside the nozzle tip imparts a swirling motion to the oil spray, the tangential velocity in the "swirl" chamber being uniform throughout a 4-to-1 turn-down ratio. Oil-burning equipment is manufactured by F. J. Raskin, Inc.

Over 40 percent of all the air introduced into the kiln is primary air at a temperature of about 140 deg. F. Blast pipe nozzle diameter is 16½ in., and the end of the nozzle is located about 10 in. inside the end of the kiln. Primary air velocity at the nozzle is around 13,000 to 14,000 f.p.m. Hot air is obtained from the side of the clinker cooler, tempering air is added from the room, and the resulting primary air is drawn through a cyclone to remove dust, and thence *via* the primary air fan to the kiln. The fan will deliver 25,000 c.f.m. of 250 deg. F. air at a fan static pressure of 22 in. of water, and is driven by a 200-hp. motor at 1200 r.p.m.

No difficulty is encountered in starting a cold kiln with cold primary air. A pressurized kerosene torch mounted on a dolly is wheeled into position at the kiln hood, and the flame is kept at the primary air pipe nozzle as long as it is required.

The section of primary air pipe inside the kiln discharge hood is fabricated from heat-resistant stainless steel and is not at present insulated or cooled in any way. A cold air pipe has been run from the cooler fan to the discharge hood for this purpose, should cooling become necessary.

Clinker is cooled in a 6- by 59½-ft. Narsted air-quench cooler, with 300 sq. ft. of grate area. This cooler features a horizontal moving grate driven by a hydraulic cylinder and carriage. A water-cooled spreader at the feed end of the cooler insures an even clinker bed across the cooler grate. A clinker breaker located at the discharge end of the cooler breaks up larger pieces of clinker. The feed end is lined with silicon carbide brick, and the remainder of the cooler with super-duty firebrick, except for the roof and upper walls at the discharge end of the cooler, where brick is not required. A suspended arch roof is used at the feed end of the cooler. Cooling air is supplied by a 132,000-c.f.m. 7.9-in. static pressure fan driven by a 300-hp. 4160-volt motor at 1,200 r.p.m.

Excess cooling air not needed by the kiln is vented through a Precipitation Company 9VG12 Multiclone dust collector and fan to a louvre-damper controlled vent stack through the roof. There is also a louvre-damper controlled relief stack between the cooler and the Multiclone to provide for abnormal periods when extra large quantities of air might be required in cooling heavy clinker loads in the cooler.

The Cottrell electrostatic precipitator (type K) used to recover dust from the kiln discharge gases is two units wide with four sections per unit. The first section is a settling chamber, and the remaining three are collecting sections, collecting progressively finer fractions of the dust. Overall efficiency is better than 98 percent. Separate screw conveyors from each section of the collector feed a common screw and elevator system which return the collected dust directly to the kiln below the chain section. Three scoop feeders in the kiln shell introduce the dust from a housing surrounding the kiln at this point.

Separate screw conveyors under the precipitator sections allow the shutdown of any one of the collecting sections of the precipitator in the event that the chemical composition of any particular size fraction of the collected dust upsets the kiln operation. However, no troubles of this nature have been encountered.

A C.I.R. compressor furnishes air for the precipitator rappers. A service elevator is located close to the precipitator.

Two F. L. Smidth No. 060 fans are used for induced draft, each having a capacity of 130,000 c.f.m. at 6½-in. static pressure and 650 deg. F. and 567 r.p.m. They are driven by 250-hp., 4,160-volt motors at 720 r.p.m. and are mounted between the Cottrell precipitator and the chimney; each fan has its own louvre-damper. The dampers are set at one position when the kiln has reached normal operation after a cold start; and the main louvre-damper between the end of the kiln and the Cottrell precipitator is used to control the kiln draft. At present

motorized drives are being installed on the fan louvres. The use of the main louvre will then be discontinued, and the starting procedure will be simplified on a cold kiln.

The induced-draft fans exhaust through a common duct to a 200-ft. Custodis Canadian concrete chimney with an independent firebrick lining.

The main kiln gear is lubricated with a spray lubrication system employing an Alemite Versatal, which conveys the lubricant from the barrel to the spray heads at the master gear and pinion and the secondary gear and pinion. Air is supplied at 100 p.s.i. by a Gardner-Davis compressor to operate the pump and for use at the spray heads. This compressor also supplies high-pressure air as required for other services about the kiln building. The lubrication cycle is not automatically controlled since it is believed that if an oiler is required to lubricate the gears, usually once per shift, the drive is much more likely to receive adequate inspection, a necessity whether lubrication is automatic or not.

Kiln Controls The kiln control panel was fabricated by F. L. Smidth and employs Bailey instruments, all of which are flush mounted. The panel is a light green in color, and the instruments and controls are black. Extensive use is made of alarms; a malfunction sounds the general alarm horn, and when it is silenced, a red light indicates the source of trouble and remains lighted until the trouoble is cleared. Thorough interlocking of kiln auxiliaries precludes dangerous situations.

There are no automatic controls involved on this kiln. Experience has proved that most such controls are difficult to apply to a rotary cement kiln. Technical personnel are not at present available for adequate maintenance; and as some of the equipment for this kiln had not been previously used, no performance pattern had been established. Automatic controls will very likely be applied as soon as some of these factors are overcome. Extensive use of recording instruments is made, however, both as a means of establishing a record of what has happened during the operation of the kiln and to provide immediate past history of operating conditions for the use of the operator in making adjustments in the process.

Functions Recorded *At the feed end of the kiln:* feed end temperature, fan duct temperatures; percent of oxygen in exit gases; percent of combustibles in exit gases; and feed end draft.

The oxygen and combustibles analyzer and sampling system used on this kiln is of particular interest in that it overcomes many of the difficulties that have been experienced with such systems used on rotary cement kilns. The gas sample is drawn from the feed end of the kiln through a semi-shielded porous stainless steel star-shaped filter with 2 sq. ft. of filter area. Half-inch diameter type 3-4 stainless steel pipe and fittings are used to carry the sample to the analyzer, which is located in a room under kiln pier 6. There are no purge line connections of valves at any point in the line. The filter and sample line are purged from the analyzer location, usually once per shift, although the analyzer will run without attention for several days quite satisfactorily during normal kiln operation.

All washing and cleaning of the sample is accomplished at the analyzer location; there are no sprays or inductor assemblies at the rear end of the kiln. A large sample is secured from the kiln feed end, 99 percent of which is discarded at the analyzer block; only the remaining 1 percent is analyzed. In this way an exceptionally fast response is obtained, and small system leaks do not appreciably influence readings. The analyzer may also be located wherever it is convenient, as far as 200 ft. from the kiln feed end. Compressed hydrogen is used in analyzing for oxygen, and filtered compressed air is used in the determination of combustibles. The combustibles are monitored to show up poor burning technique and as a safeguard against a possible explosion in the precipitator.

At the discharge end of the kiln the following functions are recorded: kiln speed; hood draft; primary air temperature; secondary air temperature; burning zone temperature; oil temperature; oil pressure; and oil flow in Imperial g.p.m.

CLINKER HANDLING AND CRUSHING

Clinker is conveyed from the Narsted clinker cooler by two Jeffrey bucket-type pan conveyors to the clinker crusher building. The buckets are 24 in. wide by 11¾ in. by 12 in. Here all the clinker is passed through a Symons 4½-ft. short head cone crusher. The crusher may be by-passed to storage, or the clinker may be spouted into a bin at the crusher building in the event of a breakdown to the single pan conveyor going to storage. Crusher product is fed directly to the pan conveyor to storage, or to a bucket elevator, which discharges onto a 48-in. by 10-ft. Dillon screen. Oversize is returned to the crusher and minus ⅜-in. product is carried to storage.

Clinker Mill Clinker and gypsum are drawn from the storage feed bins by Jeffrey Waytrol feeders. Each clinker feeder employs a vibrating pan conveyor on which the amplitude of vibration is varied to adjust clinker flow, and the gypsum feeders employ variable-speed belts driven by Adjustospede magnetic-clutch-type motors. Feed rates in lb. per hr. can be read directly at the central mill control panel, and are adjustable from that point. Short 24-in. transfer belts feed the clinker and gypsum to 24-in. feed belts which convey the clinker, gypsum, collected dust, and separator tailings to the clinker mills.

Two F. L. Smidth 11- by 15-ft. 8-in. ball mills with slide shoe bearings are used for clinker grinding. They are driven by 1,000-hp., 4,160-volt, 720 r.p.m. motors and F. L. Smidth TS-1150 Symetro reducers, driving the mills at 18.4 r.p.m. Each mill is charged with 20,000 lb. of 3-in. balls, 27,000 lb. of 2½-in balls, 36,000 lb. of 1-in. balls, and 12,000 lb. of ¾-in. balls.

The product of each mill is conveyed by a short 14-in. Fuller-Huron Airslide to an elevator. Screw conveyors carry the mill product to two Studtevant 14-ft. air separators (per ball mill). Finish cement from the separators is carried by a 14-in. Airslide to the cement pump. Separator tailings are returned to the mill feed belt. An 8-in. type H Fuller-Kinyon pump and an 8-in. transport line conveys the cement about 1,000 ft. to two rectangular stockhouses at the old plant. Air for the pump is supplied by two C-200 Fuller rotary compressors. The pipeline is carried overhead on the same bridge as the fuel oil and steam lines. An alleviator is used on the storage end of the line to vent excess air in the cement on its arrival at storage.

Clinker Cooling A complete cement cooling system has been employed, using air as the cooling medium. Cooling is accomplished in two stages. In the first stage, air is swept through the ball mill itself from feed end to discharge end, and vented through a 10-ft. No. 216A Norblo dust collector. Collected dust is chuted to the mill product elevator. In the second stage, air is drawn from the mill room into the inner cones of the air separators and vented from the outer cones by a 20-ft. No. 432-A Norblo

dust collector. This collector also removes dust from various belt transfer points, etc. Collected dust is returned to the mill feed belt.

An average of temperatures taken during August, 1955, shows the following results:

Building temperature 80 deg. F.
Mill feed (clinker, gypsum, dust, tailings) 180 deg. F.
Finished cement 185 deg. F.
Tailings 185 deg. F.
20-ft. Norblo inlet 205 deg. F.
Mill product 215 deg. F.

The circulating load in the mills is from 200 to 300 percent, and mill production is about 165 bbl. per hour. Cement is ground to a 2,800 Blaine surface area. Each mill and all auxiliaries are controlled and operated from a single control panel, except the Waytrol feeders, which have their own panel next to the mill panel. Included on this panel are starting and inching controls for the mill, all alarm circuits which include Symetro lubrication and slide shoe bearing pressure, all interlocks, conveyors, the cement pump, separators, and dust collectors.

CEMENT STORAGE AND PACKING

Cement storage consists of two rectangular bins with a total of 425,000 bbl. for normal (Type I) cement and a 50,000-bbl. silo for "Kalicrete" (Type V, sulphate-resisting) cement.

All cement is screened by Dillon screens in the normal manner. Four model 111FC St. Regis four-tube packers are used for bagged cement. Three are used for normal cement and one for "Kalicrete". Normal cement is packed in a distinctive gray bag, and "Kalicrete" in an easily distinguishable yellow bag. Bags made of a number of different weights and layers of paper are used, depending on subsequent handling of the cement. A particularly heavy bag construction is used for shipment to the far north, where rehandling of shipments is high and where bag breakage of any kind cannot be tolerated.

Bulk railroad cars are loaded by the normal packhouse conveyor system. Bulk trucks are loaded from a separate bin and weighed on certified scales at the plant office.

SUBSTATIONS AND POWER DISTRIBUTION

All power for the plant is purchased from the Manitoba Power Commission and enters the plant at 23,000 volts, 3-phase, 60 cycles, from either one of two overhead lines.

The original main substation at the old plant has been retained. A 23-kv. line from the new plant supplies this station. Power is distributed directly to motors at 550 volts and to dry-type transformers for 110-volt lighting and other loads.

At the new plant the 23,000-volt power is fed through a 600-ampere disconnect and 800-ampere 23-kv. 500 MVA type KSO oil circuit breaker housed in a switch house. The 23,000-volt power is then stepped down to 4,160 volts through a 6,000-kv.-a., 23-kv. 3-phase 60-cycle star-delta-connected outdoor transformer.

The 4,160-volt power from this transformer passes through a 2,000-ampere waterproof bus and a 1,200-ampere 5,500-volt C.G.E. type AM-5-250 Magneblast air circuit breaker to an indoor 4,160-volt tie bus. Provision has been made for duplicating the system to handle both overhead 23,000-volt incoming lines in the event of future expansion.

The main substation contains a C.G.E. indoor Metalclad switchboard consisting of five operating and one spare circuit breaker. These are C.G.E. Magneblast type AM-5-250 air circuit breakers with 250,000-volt interrupting capacity. A metering cubicle and a lighting cubicle are included in the switchboard.

Power is distributed at 4,160 volts through 3-conductor 500 MCM-PILC conductors carried in underground fiber ducts encased in concrete. Unit substations are located in the plant as follows: stone crushing department, washmill department, raw and sand mills, clinker mills, kiln department, and basin department.

All unit substations are equipped with appropriate air circuit breakers and transformers ranging from 1,000 to 1,500 kv.-a. Current at 4,160 volts is used directly on large motors and 575 volts on all other motors. The lighting load and other small loads are fed through the usual 575/117 volt dry-type transformers.

MISCELLANEOUS

A modern two-story building constructed of concrete blocks (stucco-faced and corkboard insulated) houses the plant offices and laboratory. Offices are on the main floor, and the chemical and physical laboratories on the second floor.

The weight of a barrel of clinker or cement is 350 lb. in contrast with the U. S. practice of 365 lb. for a barrel of clinker and 376 lb. for cement.

A departure from older practice has been made with regard to the plant air supply. No large central compressor room is used. Rather, smaller compressors, usually Fuller rotary low-pressure compressors and various makes of high-pressure piston-type compressors, are used for departmental air supply.

Each Norblo dust collector has its own compressor, as does also each sand, slurry, and clay silo or basin, with duplicate equipment in the case of the correcting silos. This diversification has several evident advantages — less danger of production interruption from compressor breakdown; production of air only where and when it is needed; and no long air lines with their attendant leaks, condensation, and freezing troubles.

Sumps with automatic sump pumps are located at strategic points in most buildings. The clay soil of the area, combined with a generally low-lying, flat terrain, dictated the use of such pumps. These pumps must, of course, all be disconnected and lifted from the sumps for the winter season.

Personnel Executives are as follows: J. D. Johnson, chairman of the board; J. M. Breen, president and general manager; V. C. Hamilton, general superintendent; R. S. Aiken, treasurer and comptroller; G. A. Luffman, secretary; G. A. Grant, vice-president and general sales manager.

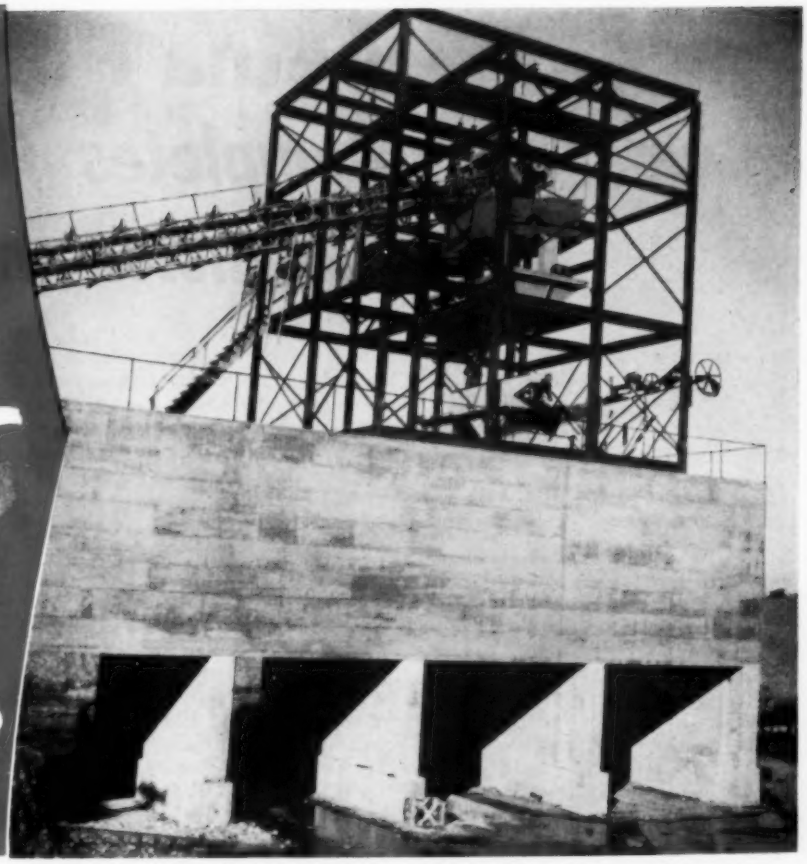
Planning, selection of equipment, and engineering for this plant was carried out under the direction of John Narsted, vice-president and manager of production, who recently retired. Other company personnel include the following: H. B. Howe, chief engineer; M. S. Jackson, electrical engineer; Dr. W. S. Weaver, chief chemist; J. B. Hanly, assistant to the general superintendent; and T. J. Kennedy, superintendent of plants. G. D. Dies was resident engineer during plant construction.

At the Fort Whyte operation C. W. Edmonds is superintendent, J. M. Legate is assistant superintendent, S. Traves is chief plant chemist, and H. N. Burrows is plant engineer. Alex Stewart is superintendent of the Steep Rock quarry.

EDMUND L. MENGEL, industrial engineer at the Waco, Tex., plant of Universal Atlas Cement Company, has been appointed assistant plant manager at the Hannibal, Mo., plant, succeeding Mike M. Henning, who is now manager at the Hannibal plant.

Mr. Mengel joined Universal Atlas in 1949. He advanced through various positions until he received his present appointment.

NEW 2,000 T.P.D. PLANT relies on SECO SCREENS



Photographed on the job Preston, Ontario (Pit and Quarry photograph)

PRESTON, ONTARIO SAND AND GRAVEL PLANT A MODEL FOR INDUSTRY

From 150 T.P.D. production capacity in 1949 to 2000 T.P.D. today. This summarizes the remarkable growth story of the Preston Sand and Gravel Company, under the dynamic ownership of Thomas J. McGovern.

When Mr. McGovern took over this business about six years ago, he was determined, not only to increase production, but equally important, to turn out clean, uniformly sized gravel. The resulting increase in business soon created the need for greater production.

Thus, in setting up the modern continuous flow plant which began operation in March 1955, Mr. McGovern chose SECO screens for all the screening requirements from scalping to final sizing. Three are set in the superstructure (closed in after the above photo was taken) and the fourth is assigned to the scalping operation shown in smaller photo.

In Mr. McGovern's own words, "We believe we could not find any vibrating screens to equal our SECO'S for satisfactory performance."

SECO

TRUE CIRCULAR ACTION

VIBRATING SCREENS

SCREEN EQUIPMENT CO., INC.

Buffalo 25, N. Y.

Manufacturers of Vibrating Screens . . . Exclusively

SEND FOR NEW SECO CATALOG No. 204 TODAY

Ben W. Calvin, president and general manager of Aetna, standing beside the new kiln control board.

Aetna Portland *Completes Third Major Expansion in Nine Years*

By WALTER E. TRAUFFER

Another ON THE SPOT Report

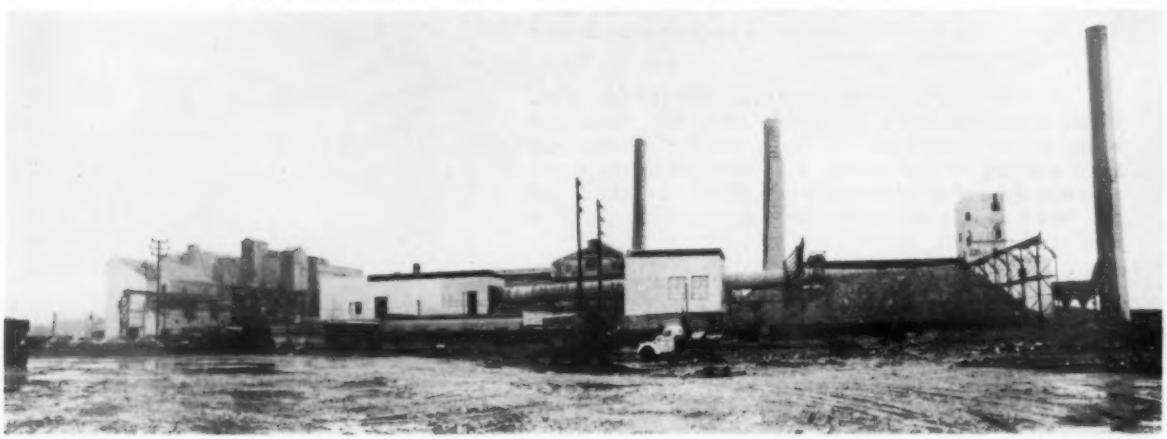
THE Aetna Portland Cement Company in January, 1956, completed an expansion program at Bay City, Mich., which increased its capacity nearly 50 percent — to 3,200,000 bbl. annually. This was done in order to meet the increasing demand as business and population keep growing in this area. Expansion programs completed in 1948 and 1953 had each increased capacity 500,000 bbl. annually, but these enlargements only temporarily met the growing demands of its old customers, let alone new ones. Some foreign cement had actually come into this area to help alleviate shortages. In spite of this latest expansion, officials of the company feel that there will still be a shortage until the other companies in the area complete the expansion programs they have under way.

The original plant, built in 1923, was a wet-process operation, with one 10- by 175-ft. Allis-Chalmers kiln. A second similar kiln was added in 1926. Later waste-heat boilers were installed, and in 1931 slurry filters were added and other important improvements were made. (See PIT AND QUARRY, June 15, 1932, pp. 16-23, 37, for a complete description.) A similar kiln installation was made in 1948. The 500,000-bbl. expansion completed in 1953 included a fourth 10- by 175-ft. wet-process kiln with a waste-heat boiler and filters, a direct-firing coal pulverizer, an inclined-grate clinker cooler, a 7- by 26-ft. 2-compartment raw mill, and a 9½- by 16-ft. finish tube mill with a 16-ft. separator. (This program was completely described in the July, 1954, issue of PIT AND QUARRY, pp. 71-4.)

In the last few years there were several developments which caused officials to decide to install a longer kiln without a waste-heat boiler. Actually, further expansion of the power plant would have been too costly; and it was considered to be more economical to install a more efficient long kiln and purchase the additional power required. Experience has already justified this decision. No accurate figures are yet available, but it is estimated that the fuel rate for the new kiln is already 25 percent lower than that of the shorter kilns, and further savings are expected.

The new installation is actually a new plant, which gets its slurry from the same source as the old plant and discharges finished cement into the same storage silos. The first step was the installation of new truck-loading silos in 1954. Then a new finish mill with an air separator was added, identical with the old ones. Then came the new 11- by 400-ft. Allis-Chalmers kiln, a B&W E56 direct-firing coal mill, a 6- by 37-ft. Fuller inclined-grate clinker cooler,

General view of the Aetna plant on a rainy day. The new kiln and stack are in foreground.



New 400-ft. kiln supplements four 170-ft. kilns with waste-heat boilers

a 26-ft. dia. Allis-Chalmers clay wash mill, a Multiclone dust collector, an 11-ft. i.d. by 200-ft. concrete stack, and a new 7- by 24-ft. raw mill. The old switchgear throughout the plant was replaced with new General Electric gear, and the stockrooms, shops, etc., were rebuilt.

Limestone and coal used in this plant are received in self-unloading boats, while clay, sand, and gypsum are received by rail. All are stored in an area served by 3-cu. yd. overhead traveling cranes. The stone is minus ¾-in. in size and requires no further processing before going to the raw mills. Clay goes to an Allis-Chalmers 26-ft. wash mill, from which it is fed to the mills.

The two original 7- by 26-ft. Allis-Chalmers 2-compartment raw mills are closed-circuited with Tyler Hummer screens. The new 7- by 24-ft. Allis-Chalmers 2-compartment mill is identical with the one installed a few years ago, except that it is in closed circuit with a Sweco circular screen. All screens have 8- and 30-mesh openings for the first and second mill compartments, respectively. Slurry is ground to a fineness of 88 percent through 200 mesh at the rate of about 105 bbl. per hr. per mill. Each of the new mills is driven by a 450-hp. motor and each of the older ones by a 500-hp. motor.

Wilfley pumps feed the slurry from all four mills to six 30-ft. dia. by 25-ft. blending tanks. One of these had been used for kiln feed, but a new 45-ft. dia. by 35-ft. tank was built for this purpose as a part of the latest program. The blended slurry is fed to this new tank and from it to all five kilns. The slurry for the four short kilns is pumped to ferris-wheel feeders and to Oliver filters over these kilns. The filters reduce the moisture content from 35 percent in the slurry to 17½ percent in the filter cake. The slurry for the new 11- by 400-ft. kiln is pumped to a 28- by 25-ft. storage tank with a Dorr agitator; from the tank it is fed to the kiln by a ferris-wheel feeder. A short pug mill is used to blend in dust from the kiln dust chamber and dust collector. The moisture content of the slurry is approximately 34 percent.

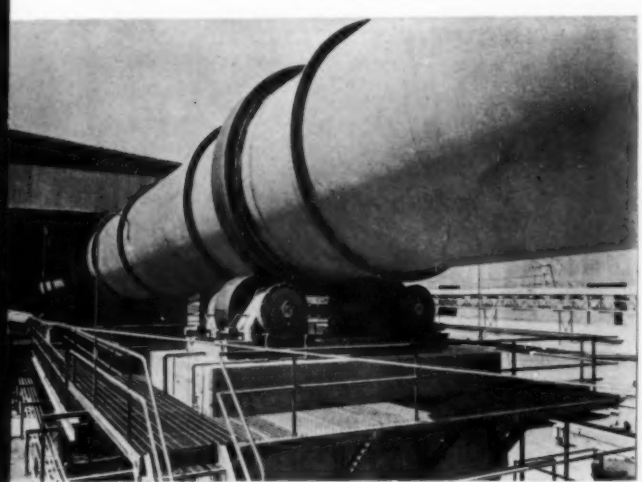
The four small kilns are practically identical, being 10- by 175-ft. units supported on two sets of rollers, with a slope of ½ in. per ft., and driven at 50 r.p.h. (top speed) by Allis-Chalmers 100-hp. variable-speed motors.

The new 11- by 400-ft. Allis-Chalmers kiln is all-welded and is mounted on five rings. It has a slope of ⅜ in. per ft. and the shell is ⅞ in. thick except under the rings, where it is 2 in. thick. There are 23 distortion rings, and the feed end has a floating-type seal ring. This kiln is driven at 72 r.p.h. by a 125-hp., 400-1200-r.p.m. variable-speed d.-c. motor through V-belts and a Falk reducer. A gasoline engine auxiliary drive is available for emergency use.

This kiln has a 60-ft. chain section, beginning 8 ft. from the feed end, with 12,000 lineal feet of chain. Beginning at the burning end, the kiln is lined with 15 ft. of 70 percent alumina brick, 55 ft. of Magnecon, 30 ft. of 70 percent, 45 ft. of Super Duty, 130 ft. of GR23 insulating brick, and 33 ft. of cold zone. The 60-ft. chain section is lined with Lumnite concrete between lifters, and the 8-ft. section at the feed end is unlined.

The four short kilns have always been operated with the minimum of instrument control. Moisture content of the slurry filter cake, its rate of feed, and the speed of the kiln are practically constant; and control

The insulated cyclone which removes dust from the coal-drying air from the kiln hood.



Below: The new 11- by 400-ft. all-welded rotary kiln.

Below, right: The hood and burner pipe of the new kiln. Air for drying coal is taken off through the duct above.

is ordinarily through variations in the firing. The new kiln, however, is completely instrumented except for an excess gas analyzer. All instruments and controls for this kiln and its coal mill and cooler are centered on an Allis-Chalmers board.

Coal for the new kiln is handled from storage on the existing equipment, but the conveyor was extended to a 25-ton tank over the new B&W E56 direct-firing coal mill. Another Merrick Weightometer records the amount of coal going to this mill, and an upper level Bindicator controls the feed to the tank. The coal mill grinds to 65 percent through 200 mesh. Drying air is taken from the kiln hood through an insulated cyclone which removes dust.

The gas leaves the kiln at a temperature of 600 deg. F. and passes through a settling chamber, Western Precipitation Corp. Multiclone dust collectors and the Green induced-draft fan to the 11-ft. i.d. by 200-ft. Rust concrete stack. Dust from the chamber and collectors is returned to the kiln feed.

Clinker is discharged from the kiln to the 6- by 37-ft. Fuller inclined-grate cooler. A fan provides 46,530 c.f.m. of cooling air, and excess beyond the requirements of the kiln is vented to atmosphere through a stack. A dragchain conveyor carries the clinker to the same storage with the clinker from the other kilns.

High-early-strength cement has actually been ground in the two new short mills but this is not standard practice. These are ordinarily used for standard portland and air-entraining cements. Air-entraining, masonry, and high-early-strength cements are usually ground in the Compeb mills.

The overhead crane feeds clinker and gypsum from the storage to the feed bins for the existing mills, as well as for the new one. The older mills include two 7- by 26-ft. 2-compartment tube mills operating in circuit with a single Bradley Hercules mill, and three 7- by 26-ft. 2-compartment Compeb mills. The new mill and the one installed in 1953 are duplicates in their entire circuits. Each is a 9½- by 16-ft. single-compartment Allis-Chalmers mill operating in circuit with a 16-ft. Sturtevant separator and a Sly Dynaclone dust collector. Clinker and gypsum are fed to the mill by two Merrick Feedoweights. Each mill is loaded with 107,000 lb. of balls graduated from 3½ to 1½ in. and operates with a circulating load of about 200 percent. Each of the two mills produces about 105 bbl. per hr. of cement ground to standard specifications. Each of these mills is driven at 19.1 r.p.m. by a 700-hp. motor.

Finished cement from the separator is carried by a 6-in. Fuller-Huron Airslide to a 6-in. Fuller-Kinyon pump, which delivers the cement to the storage silos along with that from the other mills. As has been previously stated, this entire new mill installation duplicates the one installed in 1953.

Cement storage facilities have been expanded several times in order to balance the increased output of the plant. The original installation consisted of four 32-ft. dia. by 70-ft. concrete silos with a capacity of 16,000 bbl. each. Later eight more 36- by 80-ft. silos were added. In 1954 four 20,000-bbl. truck-loading silos were added, under which are four Howe 50-ton truck scales. These silos were built by the McCord Construction Company of Upper Sandusky, Ohio. Additional truck silos are to be built this year. Nearly 100 percent of the cement shipped goes by truck—about 70 percent in bulk.

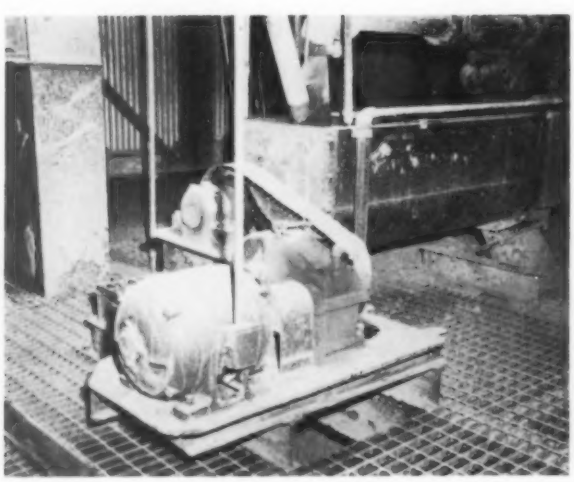
Each of the two original 10- by 175-ft. kilns was connected to an 800-hp. waste heat boiler, and a 400-hp. coal-fired boiler was used as an auxiliary. The powerhouse then contained three turbine generators, rated at 3,000 kw., 1500 kw., and

(*Continued on page* 126)

Left: The direct-firing mill which dries and grinds coal for the new kiln.

Below, left: The pug mill which blends dust from the kiln into the slurry.

Below, right: The fan and ducts for the 6- by 37-ft. inclined grate clinker cooler.



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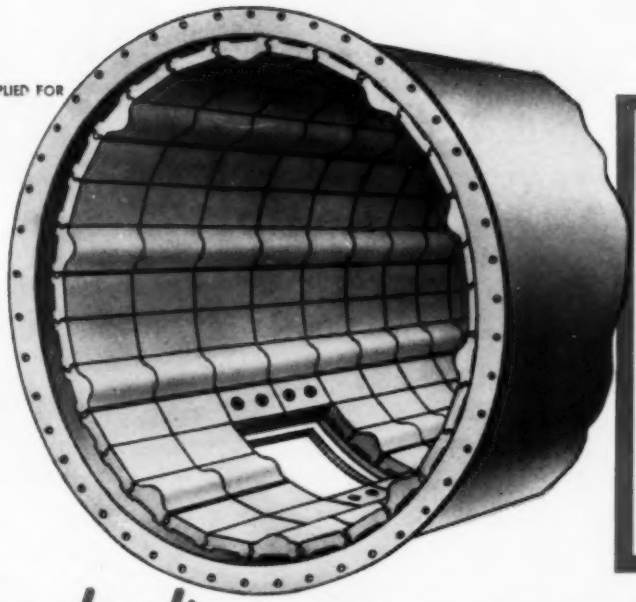

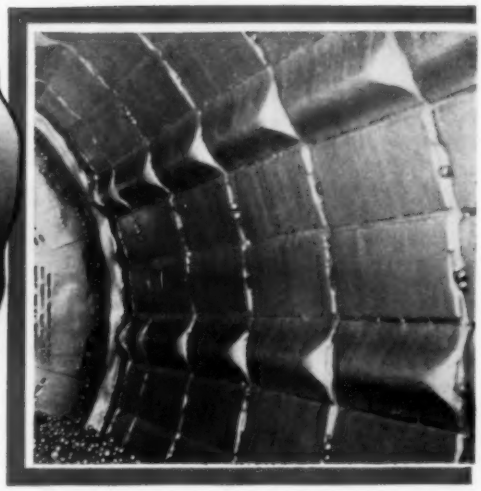

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- Savings in breakage claims and delays for replacements. Hard brittle irons are frequently broken in shipment when large castings are used. Small castings are rugged and almost impossible to break by handling.
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Liners are supplied in two nominal thicknesses, 1½″ and 3″ with 1½″ high lifters. Castings are 6″ wide x 12″ long. Positive seating of small castings on mill shell means less breakage of castings under operating conditions. For additional information on B&W Universal Tube Mill Liner Plates, write The Babcock & Wilcox Company, Process Equipment Department, Barberton, Ohio.

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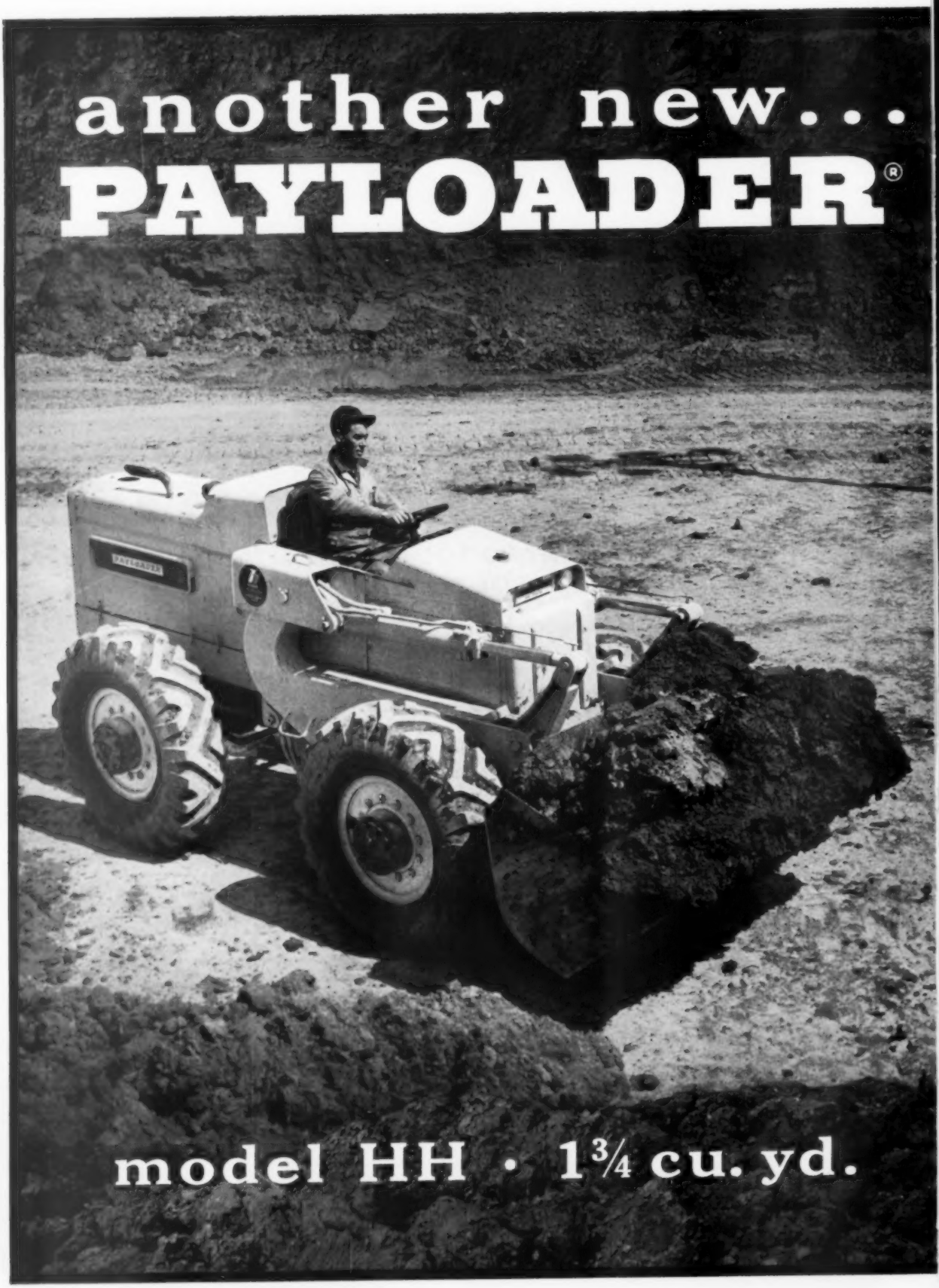
BOILER DIVISION

S-464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More production, less effort: Power steer, power brakes (on all four wheels), power shift (no "clutching") and good riding qualities also lessen operator fatigue—promote full production all day.

1956 Industrial Design Institute top award for styling this "PAYLOADER", was presented to Jon W. Hauser of Jon W. Hauser & Associates.

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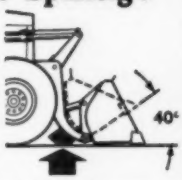

Special pads on bottom of boom arms give ground support for powerful pry-out action — relieve the axles and wheels of these strains. Bucket can tip back 40 degrees, before raising, to get heaped loads quick and easy even in shallow cuts and low piles, and to retain heaped loads.

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The "Paylomatic" transmission in this unit is a complete power-shift type Hough-built expressly for "PAYLOADER" use. It gives instant finger-tip shifting — on the go. There's no stopping for a RANGE shift, no "clutching". The forward-reverse control can also be operated under full engine speed, in any gear . . . all this, plus torque converter drive.

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Four-wheel-drive traction is even more reliable on this unit, because it has torque-proportioning differentials — an exclusive "PAYLOADER" feature. The wheels with the best footing get the most power. You get traction and *action* on sand, mud, snow.

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SUBSIDIARY—INTERNATIONAL HARVESTER COMPANY

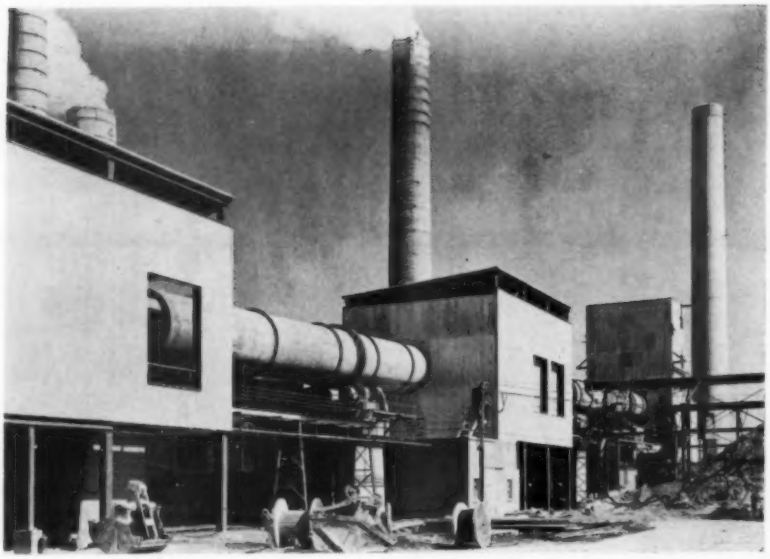
Aetna Portland

(*From page* 122)

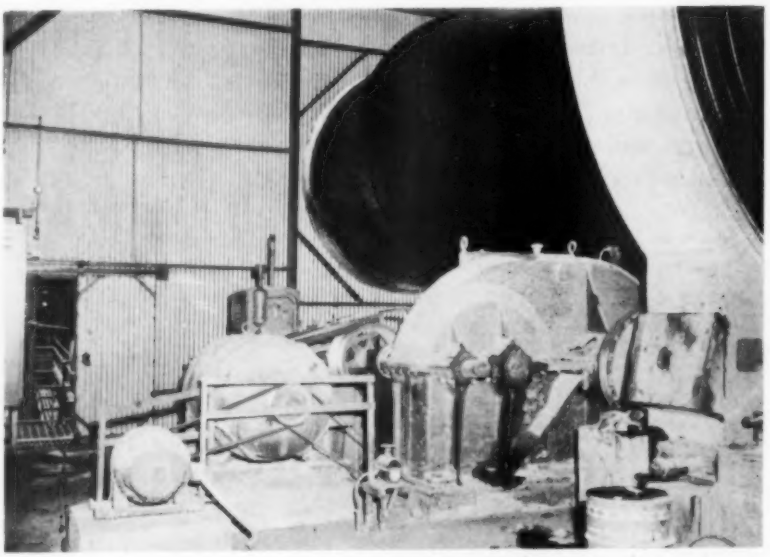
200 kw., respectively, the last-mentioned being an auxiliary unit. A 6,000-kw. Worthington unit was installed in 1948 to keep up with expansion, and the 1,500-kw. generator was dismantled. The kiln installed in 1953 has a 1,000-hp. Wickes waste-heat boiler with a Green fuel economizer, and Multiclones for dust recovery. Previously all the older kilns had their original boilers replaced with Wickes units, which considerably increased the power output; and a 4,000-kw. Worthington turbo-generator was added.

The installation of the new long kiln caused a reorganization of the power setup. The four kilns with waste-heat boilers now power the 6,000-kw. and 4,000-kw. generators. The 3,000-kw. unit is kept in reserve. The 400-hp. coal-fired boiler has been dismantled. All power required beyond the output of the power plant is now purchased from the Consumers Power Company at 2,300 v. This power is metered and goes to the powerhouse, where the entire consumption is measured.

Officers of the Aetna Portland Cement Co. include the following: Ben W. Calvin, president and general manager; Marshall G. Bolster, vice-president; L. B. Thomas, vice-president of sales; Stanley M. Bolster, secretary-treasurer; and E. A. Harris, vice-president of production. Alex Devens is general superintendent, and Paul Bischoff is chief chemist and research engineer.



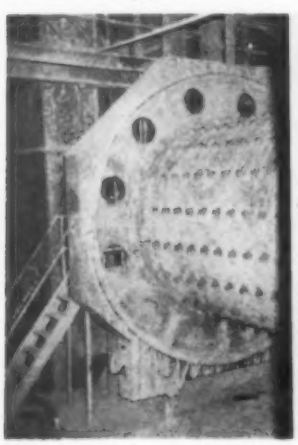
Another view of the new kiln with its 200-ft. concrete stack (right).



Right: The V-belt and speed reducer drive of the new kiln, with auxiliary gasoline engine (background).

Below, right: The multiple-cyclone collector which removes dust from the kiln exhaust gases.

The new 9½- by 16-ft. single-compartment finish grinding mill which operates in circuit with a 16-ft. separator.



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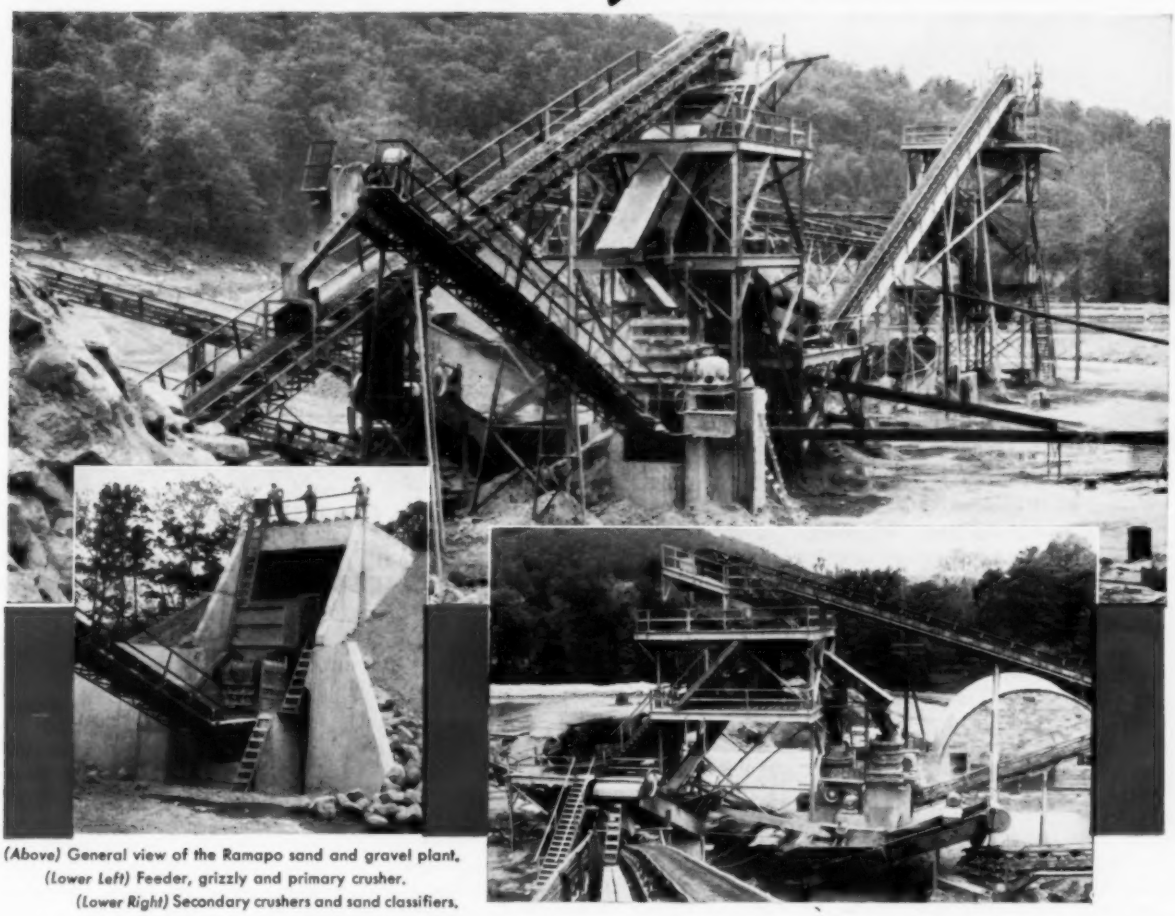

(Above) General view of the Ramapo sand and gravel plant. *(Lower Left)* Feeder, grizzly and primary crusher. *(Lower Right)* Secondary crushers and sand classifiers.

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Legal Decisions

By LEO T. PARKER
Attorney at Law
Cincinnati, Ohio

No Taxes On Independent Contractors

Last month a higher court rendered an important decision to the effect that a contractor may pay truck owners an hourly wage for the use of their trucks and that such contractors need not pay social security, unemployment taxes, withholding, and taxes under the State Workmen's Compensation Act.

For illustration, in *R. H. McManus & Company v. Michigan Employment Security Commission*, 76 N. W. (2d) 46, the testimony showed these facts: The R. H. McManus & Company is engaged in the business of excavation requiring the hauling of dirt from the excavations. The company does not maintain its own trucks, but contracts with others to haul away the dirt. In other words, the trucks are not owned by the company. The truck owners carry their own insurance, and their names appear on the sides of the trucks. The truck owners and drivers were not carried on the company's payroll; and withholding, social security, unemployment taxes, and the like were not deducted from the truckers' charges. The company paid $4.15 an hour to the truck owners, and the drivers received payment from the truck owners, approximately $2.15 an hour.

Further testimony showed that the agreement between the company and the truck owners gave to either party the right to terminate the working contract at any time. The number of loads would differ from day to day. The truckers would convey the load and dump it at a place designated by the company.

The higher court held that these truck owners are independent contractors and that the company is not required to pay any form of taxes on either the truck owners or the drivers of the trucks. This court said:

"An independent contractor relationship exists where the person doing the work is subject to the will of the employer *only as the result*, but not as to the means or manner of accomplishment."

For comparison, see *United States v. Silk*, 331 U. S. 704. Here the Supreme Court of the United States said:

"Contracts, however skilfully devised, should not be permitted to shift tax liability as definitely fixed by the statutes. The courts will find that degrees of control, opportunities for profit or loss, investment in facilities, permanency of relation and skill required in the claimed independent operation are important for decision. Where the arrangements leave driver-owners so much responsibility for investment and management, they must be held to be independent contractors. These driver-owners are small businessmen. They own their own trucks. They hire their own helpers."

$65,000 Damages

According to a late higher court decision, the operator of a quarry is obligated by the law to exercise "ordinary" care to safeguard all persons who rightfully come onto the premises. Watchmen or guards should be employed or warning signs should be erected to warn persons of the danger of land slides and falling rock.

For instance, in *Blackburn v. C. R. P. Company*, 295 Pac. (2d) 929, it was shown that a man named Blackburn was employed by a contractor to drive the latter's motor truck. The contractor had a contract to haul material from the C. R. P. Company's quarry to a mill or processing plant. The quarry is a large pit with sloping walls approximately 110 ft. high, and the method of operation involves the use of a crane (working from the top of the pit) which operates a scarifer attached to a dragline. This procedure causes the earth to be loosened and rocks and gravel to fall to the bottom of the pit, where a large power shovel loads the material into trucks.

One day Blackburn was killed by a large rock which rolled down the slope. Blackburn's dependents sued the C. R. P. Company for $100,000 damages.

During the trial the rock company attempted to avoid liability by proving that a safety engineer made an inspection of the slopes approximately once a month. The legal counsel for the rock company contended that employment of the inspector showed that the company used at least ordinary care to prevent dangerous slides, which relieved it from liability for the death of Blackburn. However, Blackburn's dependents proved that the pit contained no warning signs and that the rock company had no watchman or guards to warn men in the quarry when loose rocks were about to fall.

The higher court held the C. R. P. Company liable for $65,000 damages to Blackburn's dependents, saying that the rock company had failed to exercise ordinary care to safeguard the contractor and his employees from injuries and death by slides and falling rock.

Business Purposes

The courts consistently hold that an insurance company is not liable on its policy for accident with an automobile being used for business purposes, unless a clause in the policy clearly renders the company liable.

For example, in *The Canadian Indemnity Company v. Western Insurance Company*, 286 Pac. (2d) 532, it was disclosed that an employer named Burnett employed a mechanic who owned an automobile insured by the Western Insurance Company. Burnett owned a truck which he generally used in his business. One day Burnett had a serious accident when he was using the mechanic's automobile for business purposes.

In subsequent litigation, the higher court held that the Western Insurance Company was not liable on its insurance policy (issued to the mechanic) for injuries resulting from Burnett's accident, because no clause in the policy permitted the use of the automobile for business purposes.

Hence, an ordinary insurance policy on a motor vehicle is worthless during the time the vehicle is being used for business purposes, unless the policy contains a clause giving the vehicle owner permission to use it for business purposes.

Must List Mortgage

In another recent higher court decision, it was stated that if a policy holder fails to list with the insurance company all mortgages on an insured automobile, the insurance policy is void.

For example, in *Smith v. Motors Ins. Corp.* 270 S. W. (2d) 128, the testimony showed that one Smith insured an automobile against loss by fire for $1,700. The vehicle was totally destroyed by fire while the policy was in force. The insurance company refused to pay the loss to

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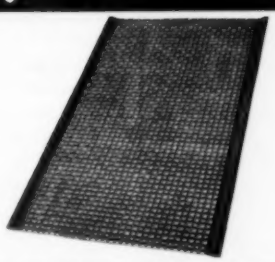

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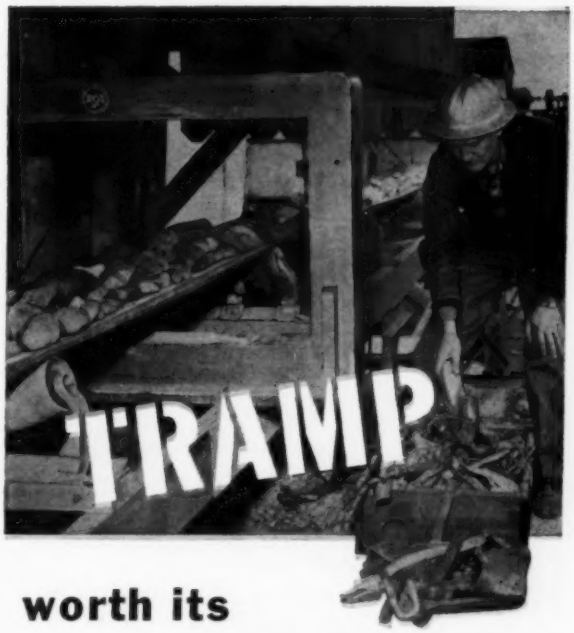

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CITY _____ ZONE _____ STATE _____

Smith because there was a second mortgage on the vehicle, not endorsed on the policy.

The lawer for Smith argued that since the first mortgage was endorsed on the policy it was not necessary to notify the insurance company of the second mortgage. However, the higher court held that Smith could not collect the loss from the insurance company, and said:

"The policy provides that there should be no coverage *while the automobile is subject to any mortgage not specifically declared and described in the policy.* The provision is not ambiguous and is not subject to any construction other than its plain meaning."

Statute of Limitations

A reader asked this question: "If a state law provides that a debt is outlawed in 6 years can the creditor collect the debt any time or manner after expiration of the 6 years?"

Yes, such an outlawed debt may be renewed automatically if the debtor makes a new agreement to pay the debt, or if for any reason the debtor makes any payment, irrespective of the amount of the payment, after the debt is outlawed. In one case, for example, a debtor owed $2,000. After the debt became outlawed in 12 years by the state's Statute of Limitations the creditor jokingly asked the debtor to pay 25c on the debt. The debtor did so before witnesses. In later litigation the higher court held that the creditor could sue and collect payment for the balance amounting to $1,999.75 plus legal interest for 12 years.

Contractor Liable for Street Injury

Recently, I received an interesting letter from a cement contractor, as follows: "If a contractor digs up a city street and then fills in dirt, is he relieved from damage law suits by automobile drivers injured because the city employees did not keep the street in repair? What duty has a contractor to keep a city street level and safe for automobile travel after a ditch has been dug and properly filled in by the contractor? If city employees attempt to keep the street level and in good condition, is the contractor liable for injuries sustained by occupants of an automobile which runs into a valley or depression resulting from the excavation?"

According to a late higher court decision, the contractor remains liable.

For example, in *Oklahoma Co. v. Hancock*, 272 Pac. (2d) 450, the testimony showed that a contractor excavated a ditch across the street. He laid a pipe therein and filled the ditch with dry dirt to the level of the street surface. Later the city dragged and graded the street across the filled-in ditch. For two months thereafter there were intermittent heavy rainfalls and snowfall. A depression was allowed by the city employees to remain in the street where the ditch had been filled with dirt.

One day Hancock was driving an automobile along the street when it struck the depression. The automobile was wrecked, and he sustained severe injuries. Hancock sued the contractor for heavy damages, claiming that he should have kept the ditch in safe condition for travel, instead of expecting city employees to do so. The contractor argued that as the city employees had attempted to keep the street in good repair, this fact relieved him from liability and made the city liable. The higher court refused to agree with this argument, and in holding the contractor liable in damages to Hancock, said:

"The proofs justify the conclusion that defendant (contractor) filled the ditch in such manner that with the coming of the winter rains and

men who know costs

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CONVEYOR BELTING

.... tailor-made for their installations!

What are your requirements?

Write, wire or phone us. Our nearest office will give you immediate, personal service. ..... and remember

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HAMILTON RUBBER MANUFACTURING CORP.

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Branches in Chicago • Houston • Los Angeles • New York Cleveland • Pittsburgh • Indianapolis • San Francisco

Ask for our 1956 catalog on precision belting.

"We do '4-hr. jobs' in 2 hrs. with our new TD-9 Skid-Shovel"

—Beatrice Concrete Co.
Beatrice, Nebraska

"Snappiest loader on the market"
Hoosier Lime and Stone Co., Salem, Indiana, added a bonus-powered International Drott TD-9 Skid-Shovel to load crushed stone, level overburden, do custom excavating. "This is the snappiest tractor shovel on today's market," states Operator Lawrence Rutherford. "The new TD-9 Skid-Shovel lifts faster, has more engine power, plenty of operator room and comfort, operates easier, has much better vision."

"Plenty of power . . . perfect vision"
This new TD-9 Skid-Shovel loads 12 to 15 tons of zinc ore from stockpile, every 3 or 4 minutes. Turley and Yates, Rutledge, Tenn., also dig basements, clear and drain land, do custom loading with it. Says Partner Joe E. Yates: "It's fast, easy to operate, has plenty of power, and perfect loading-cycle vision. Hydro-Spring is a life-saver to unit and operator. Roomy seat and handy controls increase output, reduce tiring."

"First thing we noticed about this new International Drott was that it does former '4-hour jobs' in 2 hours," reports Supt. Eldon Chamberlain. "Watching it showed why it doubles production. This new rig fills a bucket easier and faster with pry-action break-out. Operator has better control, watches bucket action more easily—and added hp does top speed work with no strain on machine or operator."

This ready-mix concrete company also excavates and grades—digs basements, backfills, and loads spoil dirt. They recently replaced their older crawler-loader with a new International Drott TD-9 Skid-Shovel.

See how exclusive pry-over-shoe break-out action—now increased to 10,000 lbs. in the International Drott TD-9 Skid-Shovel—gets you the "too-tough-for-others" jobs; helps outproduce 'em anywhere. Prove exclusive, shock-swallowing Hydro-Spring as a cost-cutting yardage-booster. Or, try an exclusive Four-In-One Skid-Shovel—4-machine utility, one moderate investment. Ask for a demonstration!

See you at the ROAD SHOW
CHICAGO
Jan. 28-Feb. 2, 1957

International Harvester Company, Chicago 1, Illinois
Drott Manufacturing Corp., Milwaukee 8, Wis.

INTERNATIONAL HARVESTER

INTERNATIONAL®
DROTT®

What Do You Get In A BUCKET-
BALANCED DIGGING POWER
•
PROPER SHELL DESIGN FOR CAPACITY LOADS
•
LOW CENTER OF GRAVITY
Plus
"A MOUTHFUL AT EVERY BITE"
IF it's an OWEN BUCKET
Yes, there are decided differences between OWEN clamshell buckets and clamshell buckets.
These differences originate in the engineering department, on the drawing board and culminate in actual superior bucket operation.
Make your own opinion-survey of "bucketwise" crane operators. You'll find the big majority of them will express a definite preference for OWEN buckets.
Write for the Catalog...
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CLAMSHELL BUCKETS
INSURE A
BIGGER DAYS WORK
THE OWEN BUCKET CO.
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BRANCHES: NEW YORK, PHILADELPHIA, CHICAGO, BERKELEY, CALIF., FORT LAUDERDALE, FLA.

snow and alternate freezing and thaws there was created a subsidence or depression in the street that was the cause of the plaintiff's (Hancock's) injuries. Admittedly, the work was done for the sole use and benefit of the defendant (contractor). It follows that the defendant may be held responsible for negligent injury thereby caused. It follows that there was a duty upon the defendant (contractor) to restore the street to its normal condition and to take care of its work, in so far as the public rights are concerned until such restoration was permanent."

With respect to the contractor's argument that he could not be held liable because the city employees had attempted to fill in the depression, the higher court said:

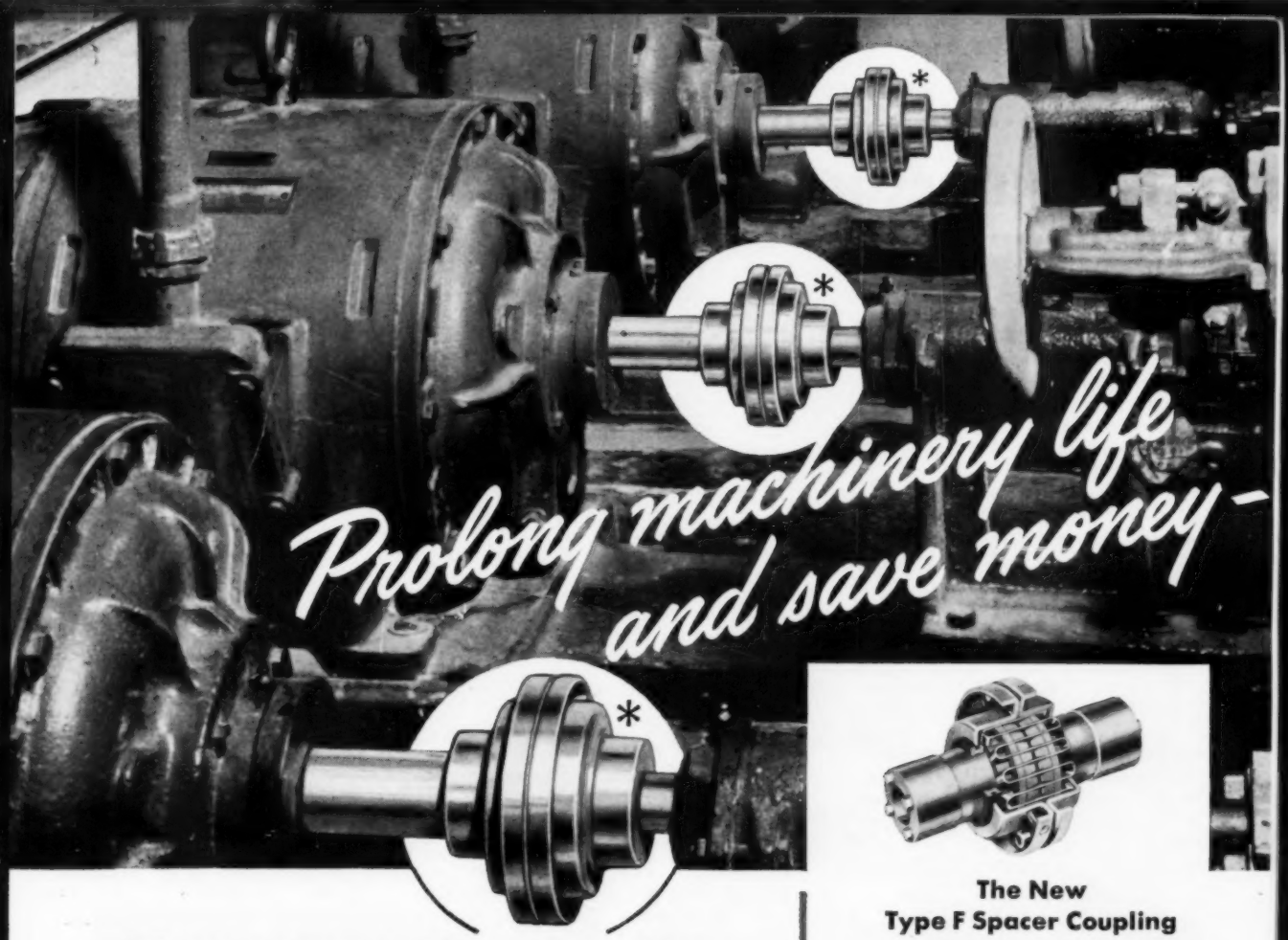
"It is argued that once the defendant (contractor) had filled the ditch to the level of the street surface and the city had thereafter commenced the maintenance of the street, the defendant (contractor) was charged with no further responsibility. The fact that the city was under a duty to maintain the street in a reasonably safe condition for travel and accepted the defendant's (contractor's) work in the street does not exempt the defendant (contractor) from the duty . . . to take proper precautions . . . to prevent injury to persons thereafter using the street."

Fraud Invalidates Policy

A certain higher court held that if an insured person files an application misstating the value of merchandise or equipment destroyed by fire, the insurance company need not pay the loss. Also, this court held that the insured person's Federal income tax return is good evidence as to the value of his equipment.

For illustration, in *Baldwin v. Bankers Insurance Company,* 222 Fed. (2d) 953, the testimony showed the following facts: One Baldwin held an insurance policy for $5,000 on certain equipment. The equipment was destroyed by fire. Baldwin filed a claim with the insurance company for reimbursement under the policy and made a sworn statement of proof of loss wherein he fixed the cash value of the equipment at $9,053.80 and the damage thereto in the sum of $7,908.80. The insurance company refused to pay the loss on the grounds that Baldwin's income tax showed that he did not own equipment worth $9,053.80.

The lower court held that the insurance company need not pay any money to Baldwin, and the higher court approved the verdict.



with FALK Steelflex Couplings

Ever since the first Falk Steelflex Coupling was designed and built, we have firmly held to these beliefs:

1. A coupling, to give fullest value, must do more than merely *connect* driving and driven machinery—it must *protect* the machinery and prolong its life.

2. A coupling, to be truly flexible, must overcome the effects of shock and vibration, as well as shaft misalignment.

Proof of the soundness of those beliefs is furnished by the record. More than one million Falk Steelflex Couplings have been used on every conceivable type of industrial application . . . giving trouble-free service, providing maximum protection to connected machinery.

* A single basic type—the famous Type F—fills 90% of all industrial application needs. It is versatile, efficient and economical. And—it is always available from factory, field or distributor stocks, in a wide range of sizes.

Write to Department 247 for engineering bulletin, including selection and dimension tables.

THE FALK CORPORATION, MILWAUKEE, WISCONSIN

MANUFACTURERS OF:

- Motoreducers
- Speed Reducers
- Flexible Couplings
- Shaft Mounted Drives
- High Speed Drives
- Special Gear Drives
- Single Helical Gears
- Herringbone Gears
- Marine Drives
- Steel Castings
- Weldments
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FALK

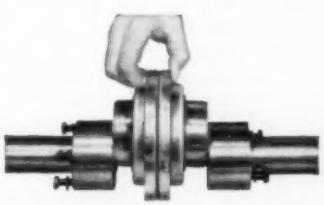
...a good name in industry

The New Type F Spacer Coupling

Here is a Steelflex coupling specially designed to permit fast, easy installation and removal in horizontal and vertical applications where it is impracticable to move the connected units—or where a space-gap (up to 12 in.) is necessary.

Like all Steelflex couplings, the Type F Spacer gives long, trouble-free service and maximum 3-way protection for connected machinery: it provides torsional resilience to reduce shock and vibration; it accommodates parallel or angular shaft misalignment; it allows free (or limited) end float.

An outstanding feature of the Steelflex Spacer is that it can be installed or removed in one piece (see photo below); no dismantling or servicing of the coupling is required. Pump assemblies can be disconnected and removed without disassembling the coupling, without exposing working parts.



The Steelflex Spacer coupling is prelubricated at the Factory and can be installed, or removed and reinstalled, without disturbing the lubricant—a highly desirable feature.

Manufacturers' News

Fuller Company, Catasauqua, Pa., has acquired all of the assets of Lehigh Fan & Blower Company, Allentown, Pa. The business will be continued without interruption as the Lehigh Fan & Blower Division of Fuller Company. Lloyd J. Hersh will be actively and directly associated with the new division.

Lehigh Fan & Blower was founded about 36 years ago and has been continuously engaged in the engineering, manufacture, and sale of blowers, fans, and specialized equipment relating to air pollution, induced draft and high temperature applications.

Nordberg Manufacturing Co. announces the appointment of Jacob S. Risley, Jr. as Sales and Service Representative of the Crusher Division in the Northwest Pacific area. He will work under the jurisdiction of Nordberg's West Coast Branch Office at San Francisco and will headquarter at Milwaukie, Oregon.

R. W. CHAFFIN

J. R. JONES

Mr. Russell W. Chaffin has been appointed General Sales Manager of the Industrial Rubber Division, Thermoid Company, Trenton, N. J., according to Charles M. Scholz, General Manager of the Division.

Mr. Chaffin has been active in the rubber industry for over 20 years and is well known for his design work in the field of conveyor systems. He was associated with several major rubber companies prior to joining Thermoid in 1954 as a special project engineer. Mr. Chaffin comes to Thermoid's main plant in Trenton from California, where he was Western Division Sales Manager.

John R. Jones has been appointed sales manager of the Pioneer Rubber Company according to an announcement by J. H. Gibson, president of the company.

Mr. Jones was formerly field sales manager of the Sundries Division, B. F. Goodrich Co., Akron, Ohio.

Jack P. Greer, Hyster Company, has been promoted to the position of District Manager of the Mid-Central District according to Robert F. Moody, Eastern Industrial Truck Division Sales Manager. He replaces Walt St. Clair, recently promoted to Assistant Sales Manager, Eastern Division. Mr. Greer's territory includes eastern Michigan, western Ohio, all of Kentucky, eastern and central Tennessee and all of Indiana except for the four northwestern counties.

Greer joined Hyster Company in 1954 and for the past two years he has been assigned to retail sales in Chicago.

Theodore S. Petersen has been appointed Assistant Sales Manager for the "Quick-Way" Truck Shovel Company, Denver, Colorado, effective at once, it was announced by Mr. Daniel S. Heffron, Director of Sales.

Petersen, originally from New York State, received his advanced education at Guggenheim Institute and later served as a Lt. Colonel in the U. S. Air Force.

In 1948 he joined the Bevis Machinery Company in Los Angeles where he rapidly advanced to the position of manager. Since June, 1955, Petersen has been connected with "QUICK-WAY" as District Sales Representative in the states of California, Nevada and Arizona.

Henry H. Platek has been appointed advertising manager of The Cleveland Worm & Gear Co., and its affiliate, The Farval Corporation. He joined the sales department, C.W.G. and Farval, in 1945 and served subsequently as assistant sales supervisor and assistant advertising manager.

Announcement of a new slate of key sales officers for the Construction Equipment Division, Blaw-Knox Company, Mattoon, Illinois, has been announced by R. P. McKenrick, vice president and general manager of the division.

L. H. DeVilling, formerly of Pittsburgh, has been named sales manager of the division. Mr. DeVilling joined Blaw-Knox in 1946, and as a sales engineer, gained wide experience with each of the Blaw-Knox products in the construction package. For the year immediately prior to becoming sales manager, Mr. DeVilling was assistant to the sales manager.

Raymond E. Hoppenrath, who joined Blaw-Knox in 1950, has been promoted from sales engineer to product manager—bins, batchers and buckets. Mr. Hoppenrath who has worked for Blaw-Knox out of Pittsburgh and Birmingham, was self employed for the year immediately prior to his appointment.

R. J. Stoddard, executive vice-president of American Hoist & Derrick Company, St. Paul, Minnesota, has announced a number of promotions in the company's engineering department.

J. J. Hite, formerly chief engineer, has been appointed director of engineering of all American Hoist products. Mr. Hite, a graduate of Iowa State College, was for several years associated with other heavy

E. R. BLANCHARD

J. J. HITE

equipment manufacturers before joining American Hoist in 1938. He was instrumental in the development of the original diesel-electric locomotive crane.

William Niessen, formerly an assistant chief engineer, has been appointed chief structural engineer. Mr. Niessen, a graduate of Drexel Institute of Technology and Massachusetts Institute of Technology, joined the firm in 1940 as an estimating and designing engineer of derricks and cranes.

Kenneth Potter has been appointed chief mechanical engineer. Formerly an assistant chief engineer, Mr. Potter began his career at American Hoist in 1927.

Edward R. Blanchard is now representing Union Wire Rope Cor-

SERVICE-SCORE STICKERS

provide valuable wire rope facts

... to test performance, speed reordering

For efficient wire rope operation you must have wire rope facts—brief, handy, accurate facts. You need them for safety (when did that line go on?). You need them for reordering (what size is the hoist line?). And you need them most of all for figuring cost (how long did it last?).

But gathering wire rope facts can be time-consuming—unless you have an easy, simple system.

Leschen's Service-Score Stickers provide such a system. The facts are always at hand—on the machine while the wire rope is working, and in the record book from then on.

Service-Score Stickers make it easy to compare the service you get from various rope constructions, types, and brands, so you *know which one is best* for you.

With the Service-Score System you prove to yourself that Red-Strand wire rope consistently exceeds industry standards for strength and safety.

Write for your starting supply of Service-Score Stickers now—or see your Leschen distributor.

LESCHEN
Red-Strand
WIRE ROPE

Keep the score and you'll use it more—Red-Strand Wire Rope

LESCHEN WIRE ROPE DIVISION
H. K. PORTER COMPANY, INC.
St. Louis 12, Missouri

A DIVISION OF **HKP** H. K. PORTER COMPANY, INC.

NEW MANUAL

on heavy media SPIRAL SEPARATORS AND DENSIFIERS

Experimentation on use of the Akins Spiral Classifier in making a sink and float separation was first started in 1938. In 1944 the first commercial 78" Akins Separator was placed in successful operation by one of the large iron mining companies. Since then there have been many developments and refinements, mechanically and metallurgically, in the Akins Separator and the HMS process. This new manual is a complete presentation of these developments and includes the latest data on heavy media spiral separators and densifiers...

- development of spiral HMS separators
- discussion of metallurgical and mechanical operation of spiral separators
- handling of middlings
- how the Akins makes a 3-product separation with one medium circuit
- operating data showing actual results
- purpose of the densifier and how it works
- flowsheets
- capacities and engineering data on Akins Separators and Densifiers
- operating and control instructions

PILOT PLANT TESTING SERVICE AVAILABLE

CIW has a 12" Akins Separator at the Colorado School of Mines Research Foundation which is available for conducting pilot tests.

For a copy of MANUAL 56 *just write to*

Akins—the ORIGINAL spiral type classifier.

COLORADO IRON WORKS CO.

1624 17th Street • Denver 2, Colorado

AKINS CLASSIFIERS • SKINNER ROASTERS • LOWDEN DRYERS

Sales Agents and Licensed Manufacturers in Foreign Countries

A SUBSIDIARY OF THE MINE & SMELTER SUPPLY CO.

poration in Michigan and Upper Indiana with headquarters at Kalamazoo.

Mr. Blanchard's educational background is centered in Michigan from grade school to Michigan State College. He served as radio and radar instructor in the Army.

Mr. Blanchard returns to his native habitat well grounded in the construction and correct installation and use of wire ropes, slings and Tufwire for prestressing concrete.

Ralph C. Johnson, Sales and Advertising Manager of Simplicity Engineering Company, Durand, Michigan, announces the appointment of Ronald Jenkins to the post of Assistant Advertising Manager. Mr. Jenkins will be responsible for the coordination of all advertising and sales promotion for the complete line of Simplicity equipment.

Mr. Jenkins is a native of Detroit, Michigan, and received a degree in Advertising at Michigan State University. He finished two years in the United States Air Force as an officer in the Air Defense Command prior to coming with the Simplicity organization.

William E. McCoy has been appointed sales manager of Caterpillar's Southwest Division with headquarters in San Francisco. He succeeds the late Bernard L. Haggblund.

McCoy has been with Caterpillar since 1939, and during that time has served in a number of positions, including that of manager of Caterpillar's Sales Training division. He was appointed Eastern Sales division sales manager in 1955, a position he has held until his recent transfer to the San Francisco office.

Karl A. Krantz has joined The Cleveland Worm & Gear Company and its affiliate, The Farval Corporation, as purchasing agent. Mr. Krantz was formerly purchasing agent for the Replacement Div., Thompson Products, Inc., Cleveland, Ohio.

R. W. Chaffin, General Sales Manager, Industrial Rubber Division, Thermoid Company, Trenton, N. J., has announced the appointment of Jerry W. Hillebrand as District Manager in the Division's St. Louis, Mo., area. Prior to his appointment, Mr. Hillebrand was a Territory Representative in that area, having joined Thermoid in 1955.

Mr. Hillebrand's former experi-

This cab lets you TAKE IT EASY on tough jobs!

Modern features in new Chevrolet truck Flite-Ride cabs make your work easier and safer than ever before . . . give you the pleasure and prestige of style that equals many passenger cars!

Those numbers in the picture (right) point out features that make business almost a *pleasure* when you work behind the wheel of a modern Chevrolet Task-Force truck! Here are some of the reasons why hauling in a Chevy is *easy on you:*

❶ *Concealed Safety Steps*—located *inside* the doors—stay clear of snow, mud, and ice, give you firmer, safer footing. ❷ *Spacious leg room* helps keep you comfortable all day long, brings you home fresher and more relaxed. ❸ *Nu-Flex seat* design means *comfortable* hauling! Jackstringer springs give ideal body support; seat back adjusts easily. ❹ *High-Level ventilation system* keeps the cab interior clean, cool, comfortable. Intake is at the bottom of the windshield—away from road heat and dust. ❺ *No-Glare instrument panel*, with handsome two-tone finish, puts instruments and controls within easy sight and reach. ❻ *Panoramic windshield* provides a full 1000 square inches of forward viewing area to make driving safer, easier. ❼ *Full-View rear window** adds to safe, convenient viewing as well as truck style.

And you'll find bright, stylish interior appointments that add to your sense of pleasure on the job. If your work calls for long hours on the road, you'll enjoy life more in a Flite-Ride cab! Check one over for yourself at your Chevrolet dealer's. . . . Chevrolet Division of General Motors, Detroit 2, Michigan.

**Optional at extra cost.*

They're the work champs of their class—with new V8's, automatic transmissions for every truck model!

You get *modern* power-performance in these Chevy medium-duty models! Compact short-stroke V8's do more work yet keep costs down. ***Hydra-Matic*** transmission† gives you no-shift hauling, reduced maintenance. And there's great ***Powermatic***‡—the first automatic transmission designed specially for big trucks!

†Optional, extra cost, Series 3000-4000 models. ‡Optional, extra cost, Series 5000 through 10000 truck models.

CHEVROLET

NEW CHEVROLET TASK·FORCE TRUCKS

Anything less is an old-fashioned truck!

ence included warehouse work with Continental Rubber Works and 17 years of sales experience with the Pioneer Rubber Mills.

Promotion of Charles Gruet to the position of manager of Hyster Company's Manhattan Sales Office has been announced by Philip Hill, vice president in charge of sales.

Mr. Gruet has been with Hyster Company as Northeast district representative, tractor equipment division, since 1954. Previously he was manager of the 14 offices of Gailey and Roberts, Ltd., Caterpillar dealership on the East Coast of Africa.

N. M. McGRANE

P. J. WOLFERT

Concrete Transport Mixer Co., St. Louis, manufacturers of Rocket revolving drum and Hi-Lo stationary drum truck mixers, has announced the appointment of John E. Branch as exclusive sales agent for the company's products in the North Texas territory.

Branch has sold equipment in the Dallas-Fort Worth area for several years while employed by a Dallas equipment distributor.

Headquarters for the new Concrete Transport Mixer Co. agent will be at Irving, Texas.

Paul J. Wolfert has been appointed supervisor of export sales for Blaw-Knox Company. Mr. Wolfert has been with Blaw-Knox for 16 years, the last eleven with the company's Export Department.

H. T. Schwier, formerly in charge of Blaw-Knox exports, has resigned and will represent Blaw-Knox in the foreign sales of rolls and rolling machinery, including steel plant equipment. Mr. Schwier had served in the Blaw-Knox Export Department since 1928.

Mr. Wolfert will make his headquarters in the company's Pittsburgh office beginning September 1.

Western Precipitation Corporation has announced that Norman M. McGrane, a veteran of thirty-one years with the organization, has been promoted to the post of Chief Technical Engineer, and also has been elected to the Corporation's Board of Directors.

Mr. McGrane is well-known throughout the dust and fly ash recovery industries, having been engaged in this field of work since he joined Western Precipitation Corporation in 1925. For many years he specialized in the mechanical phase of recovery operations and until recently was Chief Functional Engineer for the company's Multiclone (cyclonic) and Dualaire (filter) lines of recovery equipment.

The appointment of James E. Poythress as Sales Engineer for Form-Crete prestressed concrete forms in the Northeastern section of the United States has been announced by the Florida Division of the Food Machinery and Chemical Corporation in Lakeland, Florida.

Mr. Poythress has had a background of long and varied experience in the construction and engineering fields. This includes 25 years of service with the Federal Government in both civilian and military duties and 3 years in private industry with Consultant and Design firms.

Appointment of Percy S. Gough as sales manager of the Crosby-Laughlin Division has been announced by John E. Carroll, president of American Hoist & Derrick Co., of St. Paul, Minnesota.

In his new post, Gough will be responsible for merchandising of the complete line of drop forged fittings for wire rope and chain manufactured by the Laughlin and Crosby manufacturing divisions.

The 90 year old Thomas Laughlin Company, which is located at Portland, Maine, merged with American Hoist in 1955.

J. Wilbur Huff of Thermoid Company, Trenton, N. J., has been appointed Technical Manager of the company's Rubber Division. The announcement was made recently by Charles M. Scholz, Vice President and General Manager. Mr. Huff replaces John A. Muller who has been named Director of Research and Development.

George L. Nicholls, of Portland, Ore., has been appointed branch manager at Seattle, Wash., according to an announcement by Roland Whitehurst, vice president of The Electric Storage Battery Company and general manager of the firm's Exide Industrial Division. Nicholls succeeds the late F. G. H. Manring, who was in charge of the Seattle branch from 1944 until his death last April 3.

Louis A. Wehde has joined the Four Wheel Drive Auto Company staff as assistant sales manager, it has been announced by F. G. DeCoursin, FWD vice president-sales.

Wehde formerly was midwest zone manager for Dodge Bros. Corporation and also has been a zone manager for Hudson Motor Car Company.

Deane F. Wicks has been appointed Eastern District Sales Manager of the Raymond Bag Corporation, Multiwall Bag Division of The Albermarle Paper Manufacturing Company, according to announcement made by J. R. Clements, Vice-President and General Sales Manager of Raymond. Mr. Wicks' Eastern Sales District will headquarter in New York.

Fred B. Tripp, formerly plant engineer and superintendent of Petoskey Portland Cement Company, has been appointed Operations Engineer on the staff of Marquette Cement Manufacturing Company.

A mining engineer with a degree from Michigan College of Mining and Technology, Mr. Tripp was Engineer for the city of Petoskey, Mich., prior to his association with the cement company of the same name. During World War II he was a Lt. Commander in the Navy.

W. E. GALLAND

F. B. TRIPP

W. E. Galland has assumed management of the Solids Pump Division of Western Machinery Company, it has been announced by company officials. He replaces G. Y. Murray who will now head up Western Sales for the W.K.E. Division of the company.

"Bud" Galland has worked with Gil Murray throughout the concentrated development of the Wemco Torque Flow Solids Pump Division. Following graduation from Tufts

Two Booms — One American 700 Series Crawler

ERECTS *and* SUPPLIES ROCK CRUSHER!

This single American 700 Series Crawler unit got a big assignment from M & M Stone Company in Harleysville, Pa., recently. First, it was crane boom equipped to install a new rock crusher—then equipped with a shovel front to supply the crusher!

Working from the new concrete footings of the crusher, M & M's 700 Series, with 50-foot crane boom, swung the jaw crusher's 41,300 pound side frame into position at a 22-foot radius. Later, the 40,225 pound rock feeder was spotted in place working at a 20-foot radius.

Once the crusher was installed, the 2-yd. shovel was attached to the American 700 and the unit put to work supplying quarry rock for a production schedule demanding 1000 tons of crushed rock every day!

M & M's faith in the American's ability to take it day in and day out with no downtime is demonstrated by the fact that the 700 is the *only shovel* working in their quarry! Powerful, rugged, the American 700 Series was engineered for tough jobs like this—from specially designed crawler shoes right through to the payload in the bucket. Finger tip air controls keep the operator "sharp"—production rates consistently high all day long! See your American Hoist Distributor for the complete "700" Story!

AMERICAN HOIST

and Derrick Company

Saint Paul 1, Minnesota

College, Mr. Galland spent ten years in pump sales, service and research in the East before joining the Wemco organization.

Nordberg Manufacturing Company announces the appointment of Mr. William S. Presse as Sales and Service Representative of the Crusher Division in the Province of Quebec. He will work under the jurisdiction of Nordberg's Canadian Branch Office at Toronto. Mr. Presse will have his headquarters at Montreal.

A reorganization of the sales department of International Paper Company's Bagpak Division which divides the country into four sales regions, has been announced by A. A. Scholl, Division Manager.

Lee Turner has been named Eastern Regional Sales Manager with headquarters in Baltimore; E. C. Miller, was appointed Midwest Regional Sales Manager with headquarters in Chicago; H. Currie was named Southern Regional Sales Manager with headquarters in New Orleans; and R. A. Gair was promoted to Western Regional Sales Manager, headquarters in Denver.

Warren E. Hill, President of Thermoid Company, Trenton, N. J., has announced the appointment of Charles M. Scholz as General Manager of the Rubber Division. Mr. Scholz is a Vice President of the company and is continuing as Director of Marketing for all divisions and subsidiaries.

Scholz joined Thermoid as Assistant to the Manager, Industrial Rubber Division, in August, 1954. He was later named Assistant to the President and Director of Marketing, and was made a Vice President in May, 1956.

His earlier rubber experience included that of Sales Manager of hose and miscellaneous products at Pioneer Rubber Mills, San Francisco, California, and prior to that, sales development in the Industrial Products Division of B. F. Goodrich, Akron, Ohio.

International Harvester Company has named Howard S. Manwaring, assistant director of engineering since 1953, to the position of director of engineering. The announcement was made by P. V. Moulder, president.

Moulder said that, in addition to his general administrative duties, Manwaring would place special emphasis on motor truck and construction equipment engineering activities under the direction of A. E. W. Johnson, vice president in charge of engineering.

Manwaring joined the Harvester organization in 1934 as an experimental engineer at the company's Fort Wayne motor truck plant. He became product and test engineer at Harvester's Tractor Works in 1935 and was appointed manager of engineering, foreign operations, in 1946, serving in that capacity until his appointment to the position of assistant director of engineering.

Fuller Company has announced the opening of their new Kansas City, Mo., office, according to C. C. Kaesmeyer, general sales manager.

David W. Armstrong will continue as manager of the office. He has been Kansas City district manager since November 1955. Armstrong joined Fuller Company in 1949 and worked in various capacities at Catasauqua, Pa., until 1951 when he was transferred to Chicago.

Mr. Goodwin Johnson, Secretary and Treasurer of the Macwhyte Company, Kenosha, Wis., has been appointed to the newly-created position of Director of Purchases.

In addition to his corporate duties, Mr. Johnston will have direction of the buying procedures and policies of all raw material, supplies, capital equipment and office supplies.

The Timken Roller Bearing Company has announced that A. R. Attebury, who has just retired as District Manager for the Steel and Tube Division in New York, will be retained as a sales consultant specializing in Timken pressure tubing.

Mr. Attebury last February celebrated his 41st year in the Steel Industry and up to the time of his retirement had been with The Timken Company 22 years. Mr. Attebury is a member of the American Society for Metals, the Engineers Club, and the American Iron and Steel Institute.

Mr. J. F. D. Rohrbach, President of Raybestos-Manhattan, Inc. has announced the appointments of J. Stewart Munro to President of the Canadian Company and Mr. Douglas Pocock to the post of Vice President, Replacement Sales.

DON'T SPECULATE about Weight

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SCHAFFER POIDOMETERS

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Experienced bulk material handlers get *reliable* weight data at various processing stages—a specialty of SCHAFFER Poidometers. These versatile machines unite all scaling functions, including weighing, blending, feeding, mixing, recording and proportioning. Fast, automatic, accurate Poidometers insure high product uniformity. They are finely engineered and built, operating on a minimum power and upkeep basis.

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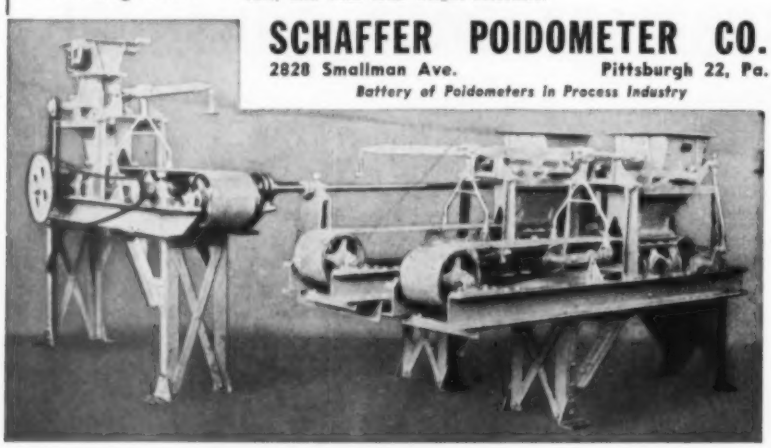


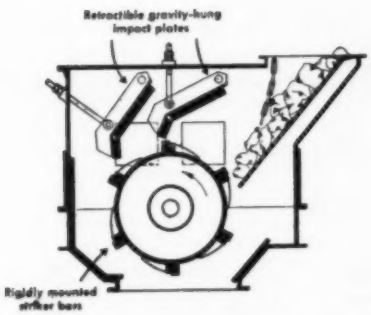
MORE NEWS ABOUT ROCK CRUSHERS

Shown above: A typical "double-stage" reduction of cement rock—from 36"-40" shovel size to 80%-85% minus ½"—in one pass, open circuit.

- HAZEMAG now introduces the **BLOCK-BUSTER**, a multi-stage (combined primary and secondary) impact crusher of large capacity and extremely heavy construction.

- One **BLOCKBUSTER** has a reduction ratio so great that many materials—cement rock, gypsum, etc.—can be crushed from shovel size to grinding mill feed in one pass, eliminating the secondary crusher.

- And where needed there is the special Hazemag "fineness-control" feature, yielding generous fractions in the desirable small aggregate sizes.



Cement, Lime and Gypsum mills alone account for more than 300 Hazemag Impactors. Over 1000 Hazemag Impact Crushers now installed all over the world.

HAZEMAG IMPACT CRUSHERS

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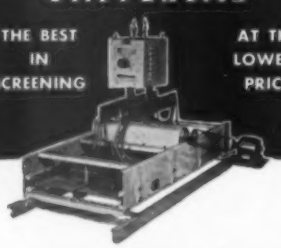

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WRITE FOR NEW CATALOG No. 150.

UNIVERSAL VIBRATING SCREEN CO.
Racine, Wisconsin
Quality Screens Since 1919

Mr. Munro joined Raybestos-Manhattan (Canada) Ltd. in 1941 as Plant Engineer and has advanced through many important positions including those as Chief Engineer, Assistant General Manager and Vice President. As President, Mr. Munro succeeds Mr. Robert Abbott who, although in retirement, will remain as a Canadian Director of the Company.

Mr. Pocock joined Raybestos-Manhattan (Canada) Ltd. in 1920, and has held the post of Sales Manager since 1940.

Dorr-Oliver Incorporated announces the promotion of Albert L. Morris to the new post of Director of Company Relations. With the retirement of Wm. Harold Oliver as Vice President for Public Relations and Personnel after nearly 46 years of service, Mr. Morris has assumed over-all responsibility for all public relations and personnel functions of Door-Oliver and its subsidiaries.

Mr. Morris has been the Director of Public Relations for the past year and previously held the posts of Advertising Manager and Assistant Director of Public Relations and Personnel. After leaving Syracuse University in 1937 he joined the D-O Advertising Department and became Assistant Manager and Acting Manager of Advertising prior to World War II.

Millard D. Ratcliff has been appointed Sales Engineer for the Southwestern Territory to represent American Crankshaft Company, crankshaft rebuilders of Charlotte, N. C. Mr. Ratcliff has offices at 1015 Walnut Street, Kansas City, Missouri and replaces E. L. Jones who now covers the Mid-Western territory.

Five appointments to department head positions at the Aurora Plant of Caterpillar Tractor Co. have been announced by C. A. Woodley, Vice President.

They are: Harold M. Schafer, Manufacturing Manager; Jerry J. Sheehan, Employee Relations Manager; William T. Gabbett, Purchasing Agent; Ivan J. Fleener, Chief Accountant; and Louis G. Frank, Chief Engineer.

Mr. Schafer has had more than 15 years of manufacturing experience with Caterpillar, and has been manager of tooling since 1954.

Starting with the Company in 1941, Mr. Sheehan has been personnel director of the Peoria Plant since 1953.

Mr. Gabbett has had nearly 14 years of experience in various office services and purchasing assignments at Peoria.

Chief Accountant of the Company's plant in York, Pa. since 1952, Mr. Fleener has been in accounting since 1943.

Mr. Frank has been Chief Engineer of Trackson Company in Milwaukee, a subsidiary of Caterpillar, since 1951. He joined Trackson in 1929.

Appointment of John A. Muller as Director of Research and Development, Thermoid Company, Trenton, N. J. has been announced by Warren E. Hill, President.

Mr. Muller joined Thermoid in 1943 and was formerly Executive Engineer and Technical Manager, consecutively, of the Industrial Rubber Division. He laid out the general plant design and equipment for the Thermoid Western factory at Nephi, Utah, and supervised installation at that plant.

Prior to associating with Thermoid, Mr. Muller was employed by the U. S. Rubber Company where he was head of Mechanical New Products Development. He is a graduate of the Newark College of Engineering.

Maxwell D. Millard who started his steel sales career as a technical apprentice with American Steel & Wire Division in 1934, has been appointed general manager of sales. The announcement was made by Harry M. Francis, vice-president of sales for this Division of United States Steel Corp.

Mr. Millard comes to his new post in the Wire Division's headquarters in the Rockefeller Building from Pittsburgh headquarters of U. S. Steel where he held the position of director of distribution and availability in the Commercial Dept.

In his new Wire Division post, Mr. Millard will supervise the sales activities of 250 salesmen and specialists in selling the Wire Division's 70,000 steel products to some 10,000 customers throughout the nation and overseas.

Joy Manufacturing Company, Pittsburgh, Pa., has announced the appointment of John P. Cartwright as Sales Manager, Industrial Sales. Mr. Cartwright will headquarter in the company's general offices in Pittsburgh.

Mr. Cartwright joined the Joy organization in 1950. He subsequently became sales representative in the

"Easy as filling a coffee bag," say men who prepare supply of Akremite.

Simple and safe to store, Akremite can be mixed right at the mine location.

"How We Cut Blasting Costs 50%, Increased Output 20%, with New Akremite Process"

Spencer prilled Ammonium Nitrate is base for new simple, safe, low-cost explosive

"We've found the new Akremite Blasting Process, now in use at our Cheshire, Ohio, operations, to be the ideal explosive for strip mining," reports F. H. Howe, Superintendent of Ohio River Collieries. "Because the ingredients are cheaper and the mixing process so much simpler, we have cut explosive costs 50% with Akremite. At the same time, better fragmentation produced by Akremite lets us move 20% more yards per month.

"The terrain in which we work is unusually difficult, but because Akremite is so safe and easy to handle, we still come out ahead."

☆ ☆ ☆

Akremite, the simple but revolutionary new explosive, is named after its inventor, R. I. Akre, superintendent of drilling at Maumee Collieries Co., Terre Haute, Ind. Akre uses prilled Ammonium Nitrate, produced by Spencer Chemical Company, as the base for his new explosive.

By itself, ammonium nitrate is not an explosive. But Akre found that if he mixed it with carbon black, packed it in a polyethylene bag, confined it in a drill hole and detonated it with a high gelatin dynamite and primacord, it produced a tremendous explosion.

Recently, Southern Research Institute at Birmingham put Akremite through a series of safety tests. They fired bullets into bags of freshly made Akremite. And they conducted the regular pendulum-friction and modified propagation-through-air tests.

Not a single explosion, fire or crackling resulted from any of these tests. Akremite with Spencer prilled Ammonium Nitrate is not only cheaper and better, but many mines report it is the safest strip mine explosive they have ever used.

(NOTE: Spencer Chemical Co. will be happy to provide you with further information about the Akremite Method as discussed by Mr. Howe.)

SPENCER CHEMICAL COMPANY

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Washington, D.C. district, and Washington District Manager.

Succeeding Mr. Cartwright as Washington District Manager is Arnott J. Lee, who has worked in various sales and sales promotion capacities since joining the company in 1934. Mr. Lee is a graduate of the University of North Dakota with a degree in Mining Engineering.

Joy Manufacturing Company of Pittsburgh has announced the appointment of William Hanson Jr. as Manager of Conveyor Products at the New Philadelphia plant.

Mr. Hanson is a graduate of the University of Wisconsin. Before joining the Joy organization in July of 1951 Mr. Hanson worked as a private engineering consultant. Mr. Hanson started with Joy as a designer . . . later moving to Assistant Manager of Conveyor Products.

Following the annual meeting of the Ajax Flexible Coupling Co. Inc., the following officers were elected: William T. Welch, Chairman of the Board; Wayne Belden, President; Harley E. Northrop, Executive Vice President; Charles W. Belden, Vice President; Robert G. Cady, Treasurer; Thomas H. Brumagin, Secretary.

The Ajax Flexible Coupling Co. Inc., founded in 1920, is one of America's foremost manufacturers of flexible couplings for direct connected machinery together with vibrating conveyors.

L. L. GARBER

A. H. JACKSON

Lawrence L. Garber has been named to the newly created position of Vice President in charge of production for H. K. Porter Company, Inc. In that post he will supervise production for Porter's thirteen divisions which manufacture industrial rubber products, electrical equipment, steel, refractories, forged steel pipe fittings, non-ferrous metals, saws, cutting tools, and wire rope. Mr. Garber's offices will be in the company's Pittsburgh headquarters. Mr. Garber joined the Porter organization in 1950. Before assuming his post at Disston he was General Manager of the Alloy Metal Wire Division, Prospect Park, Pa.

Blaw-Knox Company, Pittsburgh, has announced the appointment of A. H. Jackson as vice president-general manager of its Equipment Division Plant at Blawnox, Pa.

Mr. Jackson succeeds Capt. E. C. Rook, who recently was advanced to vice president-general manager of the Fabricated Products Group, consisting of five divisions operating five plants and auxiliary facilities.

A native of Pittsburgh, Mr. Jackson joined Blaw-Knox in 1927. For some years he was sales manager of the Tower Department and during the past year served as manager of the Division's Engineering and Development Department. He is a mechanical engineering graduate of Cornell University.

A. H. Plumpe has been named Manager of Fruehauf Trailer Company's plant at Delphos, Ohio.

Mr. Plumpe has been with Fruehauf for the past 20 years serving in Detroit, Fort Wayne and finally, Delphos. Prior to his appointment as Plant Manager he was Production Superintendent at Delphos.

Before joining Fruehauf in 1936, Mr. Plumpe was employed in Detroit by Graham Paige Motor Car Company and Motor Products.

Atlas Powder Company has announced the appointment of James L. Wetzel as manager of its Eastern District explosives sales affice, with headquarters in the company's General Offices here.

Mr. Wetzel, manager of Atlas' explosives sales office in Pittsburgh, Pa., since 1951, will be succeeded in that post by John K. O'Hare, special representative in the office.

W. P. Blanchard has been elected Vice-President and General Manager of Yuba Manufacturing Company. He was formerly secretary and treasurer.

Mr. Blanchard's headquarters will continue at Benicia, California, where he will have direct responsibility for Yuba's entire operations at its plant on upper San Francisco Bay. He will also direct operations of the C & D "Movall" division, Perkins, California, near Sacramento, and the Stockton Iron Works at Stockton.

The General Tire & Rubber Company has announced the promotion of Robert Moran to manager of Defense and New Products sales. Moran's new assignment was made by L. A. McQueen, vice president. He succeeds R. H. Mallory who has been promoted to general manager of The General Tire & Rubber Company of Canada, Ltd., General's Canadian tire operation in Toronto.

Since 1953, Moran has served as manager of General's Air Springs division. He will continue to handle this assignment as a function of the New Products operation.

Fred W. Hartlage has been appointed sales promotion manager

C. W. PETERSON

F. W. HARTLAGE

for Pioneer Engineering Works, Inc., Minneapolis, Minnesota, a subsidiary of Poor & Company, Chicago.

Hartlage was formerly an account executive with the Alfred Colle Advertising Agency and advertising and sales promotion manager with the Baker-Lull Corporation.

Carl W. Peterson has been elected Executive Vice-President of Dodge Manufacturing Corporation of Mishawaka, Indiana. He was previously Vice-President and Works Manager.

Earl Wedlake was elected Vice-President in charge of Production and Purchasing. He came to Dodge in 1940 from the Aircraft Division of Bendix Aviation Corporation in South Bend.

Karl D. Jahnke was promoted to the offices of Secretary and Treasurer to succeed Temple Williams who retired on July 1st.

Webster Manufacturing, Inc., Tiffiin, Ohio, has announced the election of J. B. Nordholt, Jr., as president of the company. Former president, J. B. Nordholt, Sr., was elected chairman of the Board to succeed Arthur L. Hossler.

Mr. Harold Lavin, Eastern District Manager for the Construction Machinery Division of Chain Belt Company, Milwaukee, Wis. has opened offices in Stamford, Connecticut.

Power-Dome more than a name

. . . proves real gas saver, reduces upkeep, too . . .

How Chrysler Engineering Cuts Truck Operating Costs

by Jim Byers

When a new truck engine that promises more MPG and lower upkeep comes along, that's *news*.

But, naturally enough, fleet operators prefer not to go overboard in their praise of such new developments until they've proved them in actual operation.

That's the story of Chrysler Corporation's radically different Power-Dome V-8 combustion chamber, introduced in the 1954 Dodge C-1 series.

From the start, fleet men were agreed it looked great "on paper", but had to wait for a *factual* answer to the all-important question, "Will Power-Dome actually increase gas mileage, actually reduce maintenance costs?"

The answer to that question, after well over two years of service in fleets of all types the country over, seems to be an unqualified "Yes".

Owners of Series C-1, and the current C-3 Dodge V-8 trucks report remarkable gas savings and unusually low maintenance costs. They say they not only get more MPG (on regular fuel), but find engines maintain power and efficiency far longer than those of standard design.

In layman's language, here is how Chrysler engineers were able to give Dodge short-stroke V-8's these cost-cutting characteristics:

First, let's study the diagram below.

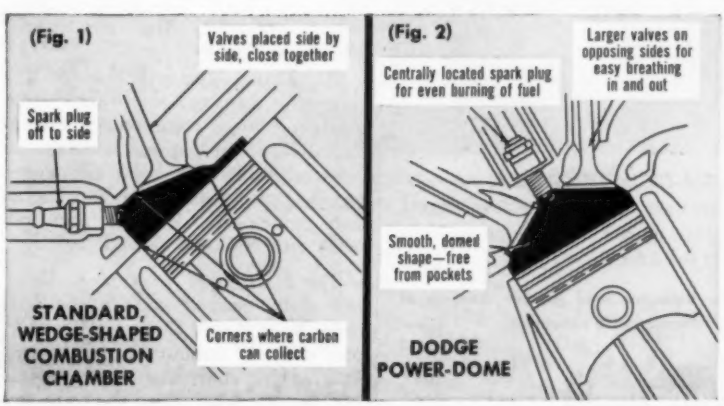
You'll notice, among other things, that the standard, wedge-shaped combustion chamber (Fig. 1) has corners where carbon can easily collect, whereas the Dodge Power-Dome chamber (Fig. 2) eliminates such power-stealing carbon hot spots.

Next, notice the spark-plug location. In the Power-Dome design, it is centrally located, instead of off to one side. Flame travel, therefore, is uniform to all parts of the chamber; thus the fuel mixture is burned faster, more evenly, and more completely.

Valve placement, too, is unusual. In the Dodge Chrysler-engineered power plant, intake and exhaust valves are located on opposing sides. This permits use of larger valves for easier engine breathing, elimination of fuel waste.

In addition to Power-Dome, Chrysler engineers have incorporated other features in Dodge truck engines that contribute to their unusual operating economy. Among a number of such advancements not found in most competitive makes are floating oil intake, ceramic fuel filter, positive exhaust valve rotators and dual exhaust system as standard equipment.

In fact, Chrysler engineers have made "fleet economy" their theme throughout the designing of today's Dodge Job-Rated Trucks. The result is a full line of trucks any cost-conscious fleet operator would be wise to investigate before investing in a replacement or adding to his fleet.


(Fig. 1)
Valves placed side by side, close together
Spark plug off to side
STANDARD, WEDGE-SHAPED COMBUSTION CHAMBER
Corners where carbon can collect
(Fig. 2)
Larger valves on opposing sides for easy breathing in and out
Centrally located spark plug for even burning of fuel
Smooth, domed shape—free from pockets
DODGE POWER-DOME

An advertisement for DODGE TRUCKS—the make with the *Forward* Look

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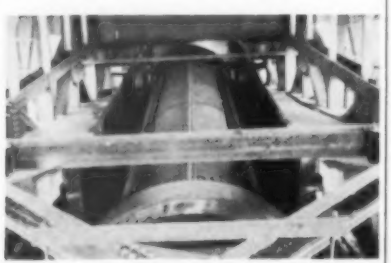
BUCKET LADDER AND HYDRAULIC DREDGES for dredging placer properties, harbor and levee construction, channel changes, production of sand and gravel. Hydraulic dredges from 6-inches up; bucket sizes: 2½ to 18 cu. ft., or larger. Digging depths below water as required.



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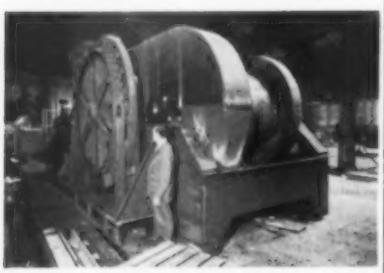

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Industry Personalities

G. N. PETERSON

GILBERT N. PETERSON, plant engineer at the Universal, Pa., plant of Universal Atlas Cement Company, was appointed assistant plant manager at the Buffington, Ind., plant, effective July 1, 1956.

Mr. Peterson attended the University of Wisconsin, where he was graduated with a B.S. degree in mechanical engineering. From 1943 to 1946, he served in the U. S. Navy, and subsequently was employed by the Carnegie-Illinois Steel Corporation at Gary, Ind.

He began his employment with Universal Atlas in 1950 at the Buffington plant. In 1951 he was made maintenance engineer at Buffington and in June, 1952, he was promoted to plant engineer at the Universal plant, a position which he has held until his present appointment.

RALPH E. FRANK, rock wool insulation sales commodity manager, and DAVID L. SHANK, asbestos sales commodity manager for the National Gypsum Company have been named division commodity managers reporting to A. H. Fay, general commodity manager. Both are newly-created positions.

Mr. Frank, who will manage the concern's asbestos, rock wool, and insulation board commodity sections, joined National Gypsum in 1932.

Mr. Shank will head the company's gypsum products and metal lath commodity divisions. He has been with National since 1950.

The election of JOSEPH A. DOOLEY to the post of sales manager of New York Trap Rock Corporation was recently announced by Wilson P. Foss Jr., chairman of the board. Mr. Dooley, who joined the company in June, 1947, became assistant sales manager in 1953. He will continue as assistant to Gerald M. Boyle, vice-president in charge of sales for New York Trap Rock.

H. WILLIAM ORTH has been promoted to sales manager of the Acoustical Sales Division, National Gypsum Company, Buffalo, N. Y. Mr. Orth succeeds George W. Handy, who has been named technical director of the company's new Commercial Trade Sales Division.

MARDIS TURNER has been named plant manager of the National Gypsum Company's Shoals, Ind., gypsum plant, succeeding Robert E. Scifres, who was promoted to production manager for the firm's coastal gypsum division.

Mr. Turner joined the National Gypsum Company in January, 1953, as plant engineer at the National City, Mich., plant. In July, 1953, he was promoted to production superintendent, a post which he held until he assumed his new duties at Shoals.

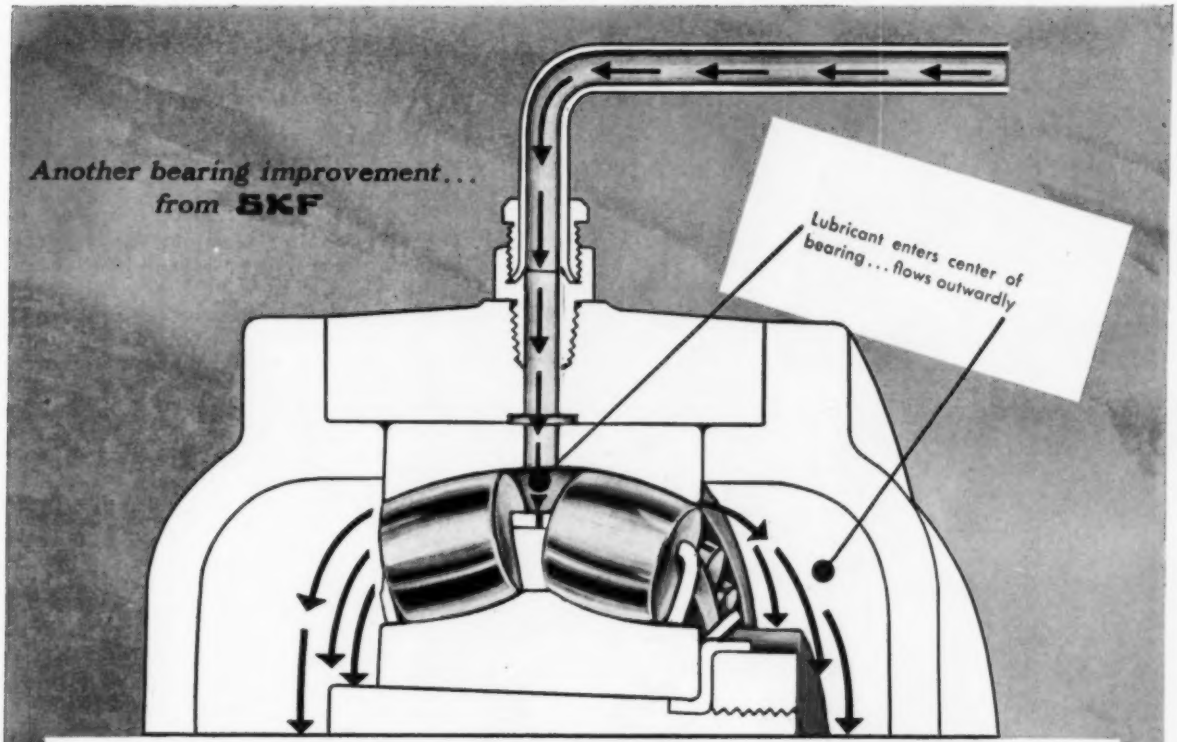
JOHN F. CIBULA was recently named production manager for all quarry operations of Bradford Hills Quarry, Inc., East Petersburg, Pa. Quarry operations include those at Newport, Lititz, Morgantown, Oxford, Downingtown, and Norristown, Pa.

Prior to 1954 he was associated with the General Crushed Stone Company for several years.

GERALD M. BOYLE, vice-president, sales, and a director of the New York Trap Rock Corporation, New York, N.Y., was among eight prominent New York state businessmen named to Governor Harriman's Business Advisory Council. The council was created by governor Harriman a year ago to promote the growth of business and industry in the state.

Mr. Boyle has been an executive of New York Trap Rock since January, 1950. Before that he was engaged continuously for 25 years in the retail construction materials business in and around the New York metropolitan area. He was vice-president of the Roslyn (L. I.) Asphalt and Materials company immediately before he joined New York Trap Rock.

Long active in the movement for improved roads and highways, Mr. Boyle is a member of the joint technical committee composed of representatives of the state department of public works and the New York State Crushed Stone Association. He is also a member of the Associated General Contractors of America and an associate member of the Highway Research Board of the National Academy of Sciences.



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For these reasons, all future production of SKF double row spherical roller bearings above 240 mm O.D. (9.4488") will be made with three equally spaced drilled holes in the center of the outer ring without any extra charge to our customers. *This permits the lubricant to enter the center of the bearing.*

With the lubricant (either grease or oil) being introduced into the center of the bearing, all working surfaces are quickly and completely covered. In addition, the outward flow flushes out the old lubricant, and with it, any abrasive dust, dirt, moisture or other impurities.

And where circulating oil lubrication is required, there is a continuous flushing and cooling of the bearing.

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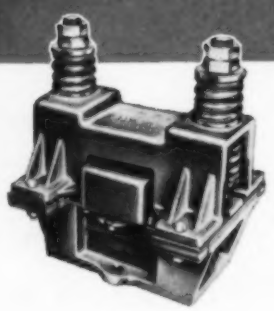

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Obituaries

MARSHALL L. NOEL, 50, associated with the construction machinery field since 1928, was one of the 74 passengers aboard the Venezuelan Superconstellation airliner which crashed into the ocean off the New Jersey coast June 20, killing all aboard. He was enroute to Caracas on business in connection with Maquinarias Bolivar, C. A., Ciudad, Venezuela, a construction machinery dealership he had organized last year to handle Allis-Chalmers equipment in the state of Bolivar.

Mr. Noel entered the construction equipment field in 1928, when he joined the Allis-Chalmers Mfg. Company's Tractor Division.

In 1947 he was elected vice-president and general sales manager. He continued in these capacities until he resigned in March, 1950, to become vice-president and treasurer of Tractomotive Corporation, Deerfield, Ill. He left this company in 1952 to become president of the Frantz Tractor Co., Inc., New York City,

JOHN JERMAIN PORTER, honorary chairman of the North American Cement Corporation, died recently at his winter home in Nokomis, Fla. Mr. Porter had been associated with North American and its predecessor organization, Security Cement and Lime, in Hagerstown, Md., since 1913.

JOHN J. CLEARY, vice-president of Sand Products Corporation, died recently in Cleveland, Ohio. Mr. Cleary, a member of the American Foundrymen's Society and its Old Timer Group, had been associated with Sand Products Corp. for nearly 30 years.

BEN R. COLLINS, who retired as secretary-treasurer and director of the Longhorn Portland Cement Company in August, 1955, died at the age of 56 in San Antonio, Tex. Mr. Collins had been with Longhorn for 26 years before retiring.

MACY W. SMITH, 43, works manager of the U. S. Gypsum Company plant at Guelph, Ont., suffered a fatal heart attack on June 2 in Fergus, Ont.

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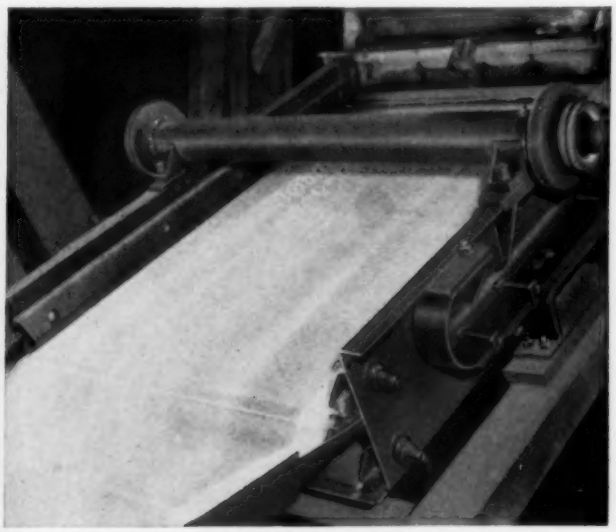
Link-Belt "CA" Vibrating Screen and non-clogging spray nozzles are combined for efficient washing and sizing.

CA

For high-capacity screening of a broad range of materials—Link-Belt "CA" Vibrating Screens are your answer. Concentric Action of vibrator mechanism imparts positive, uniform, circular motion to every square inch of the screening surface. Centrifugally-actuated, unbalanced weights reduce vibration of accelerating and decelerating—are easily adjusted to the amplitude of highest screening efficiency. What's more, lively vibrating action achieves bed stratification *fast*—assures accurate sizing, thorough rinsing, rapid dewatering. Made in a complete range of sizes to suit all plant capacity requirements—single, double or triple decked.

Call your nearest Link-Belt office or write for new Book 2554.



Here fine silica sand is effectively sized by a double-deck Link-Belt "UP" Unbalanced Pulley type vibrating screen.

UP

For economical separation of light to medium weight materials—choose Link-Belt "UP" Vibrating Screens. Positive, high-frequency action over entire area of cloth provides maximum sizing opportunity for every particle. Even on the smallest cloth sizes, blinding is virtually eliminated. And you'll like the lower power and maintenance costs resulting from two-bearing simplicity. "UP" screens are available in open, semi-enclosed, or totally-enclosed types, single or multiple decks in a wide range of sizes.

Get complete information at your nearest Link-Belt office or by writing for Book 2377.

LINK-BELT

VIBRATING SCREENS

LINK-BELT COMPANY: Executive Offices, Prudential Plaza, Chicago 1. To Serve Industry There Are Link-Belt Plants and Sales Offices in All Principal Cities. Export Office, New York 7; Canada, Scarboro (Toronto 13); Australia, Marrickville, N.S.W.; South Africa, Springs. Representatives Throughout the World. 13,817

Another Gar Wood 75B advantage in rock!

Independent travel while swinging, an important feature in Gar Wood's 75B, gives you the extra mobility you need for quarry work. You can swing or hoist while traveling . . . load out a bigger daily tonnage more efficiently.

All three operations—swing, hoist and travel—are easier and safer with a 75B. Direct manual controls retain true operator "feel." Power-actuated drum clutches are easier to engage, positive in operation. Power steering gives the operator finger-tip control and maneuverability, regardless of floor conditions.

Maintenance is easier, too. Massive crawler base takes extreme shock and strain. Heavy-duty double hook conical rollers eliminate pin strain and rocking under load. Independent chain crowd eliminates delays and expense caused by broken cable. Fluid coupling, optional on the 75B, absorbs shocks, reduces wear and tear on machine.

From boom to crawlers, Gar Wood 75B's are designed for efficient economical work in rock . . . built by specialists in ¾ yard machines. Call your Gar Wood dealer for full information, or write to: Customer Service Department, Gar Wood Industries, Inc., Wayne, Michigan.

GAR WOOD INDUSTRIES, INC.

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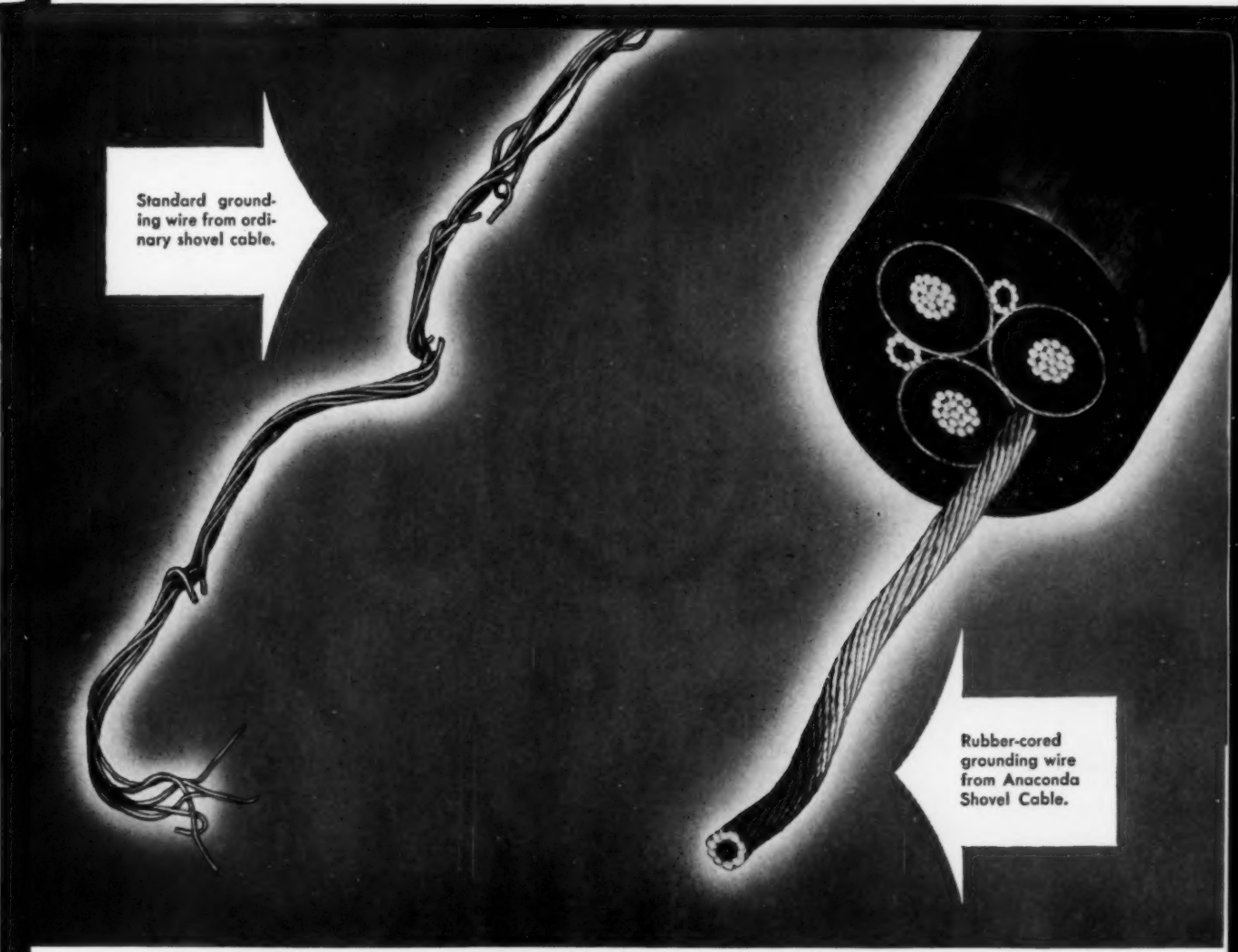
Plants in Wayne and Ypsilanti, Mich.; Findlay, Ohio; Mattoon, Ill.; Richmond, Calif.

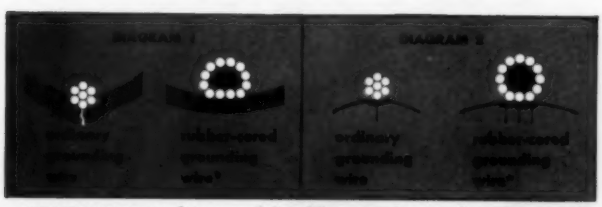


PHOTOGRAPH of grounding wires from actual cables. Note how wires in ordinary shovel cable have kinked and broken in service – while Anconda's patented rubber-cored grounding wires show no sign of damage.

Look how Anaconda's rubber-cored grounding wires

keep cable on the job and out of the shop

When shovel cable is moved in mining operations, ordinary grounding wires tend to move within the cable—to kink and break during bending, as the actual sample on the left shows.



LARGER DIAMETER of Anaconda's rubber-cored grounding wire, unlike ordinary grounding wire, will not cut insulation if cable is crushed (diagram 1). In addition, it provides broader contact with the shielding, provides a more positive ground (diagram 2).

*Patented by Anaconda

In contrast, Anaconda's patented rubber-cored wires, right, conform more readily when compressed or bent. Every wire in every strand is cushioned. No kinks or breaks occur.

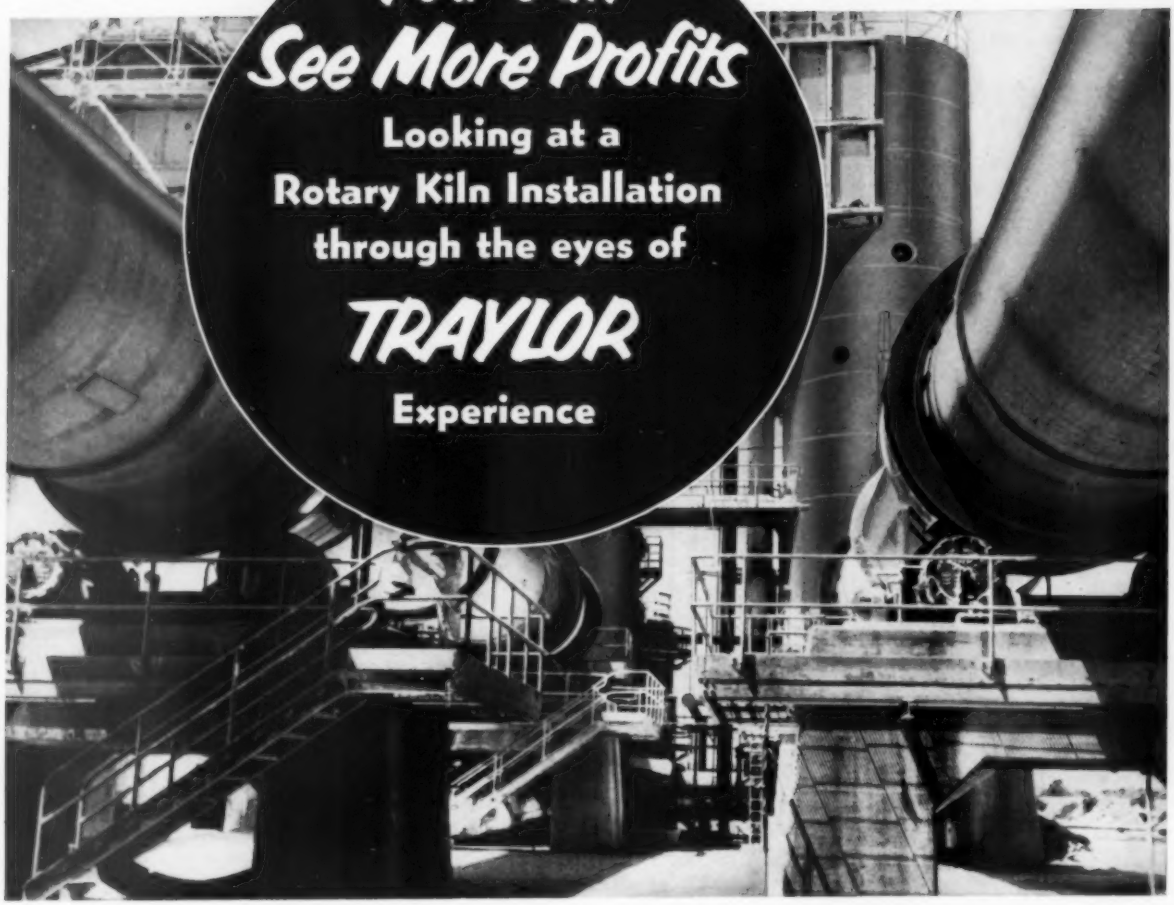
Rubber-cored grounding wires also have larger diameters—this provides (1) broader contact and shielding and (2) reduces tendency of the ground wires to cut the individual wires in both the shield and the grounding wire.

The only shovel cables made with rubber-cored grounding wires are made by Anaconda. For more information, call the Man from Anaconda or see your Anaconda distributor. Anaconda Wire & Cable Company, 25 Broadway, New York 4, N. Y. 56332

ASK YOUR ANACONDA® DISTRIBUTOR ABOUT SHOVEL CABLE

You Can See More Profits

Looking at a Rotary Kiln Installation through the eyes of TRAYLOR Experience



THE biggest producers of lime and cement rely on Traylor's vast experience to provide them with the most efficient and profitable rotary kiln installations. Built on the average of over 1 a month for the last 15 years, more than 175 Traylor Rotary Kilns are currently engaged in the calcining, roasting and chloridizing, volatilizing, sintering and nodulizing of over 20 different products.

This wide experience has equipped Traylor engineers with a keen understanding of the thermo-processing requirements of modern limestone and cement production. Exclusive Traylor design features are providing producers with a high degree of product control and a low level of maintenance costs.

Every Traylor Rotary Kiln is "Traylor-Made" to meet the production requirements of a specific process. Sizes have been made from the smallest up to 12′ in diameter and 450′ in length.

Complete specifications and all the facts on the profit-producing advantages of Traylor Rotary Kilns are contained in Bulletin #1115 . . . a copy is yours on request.

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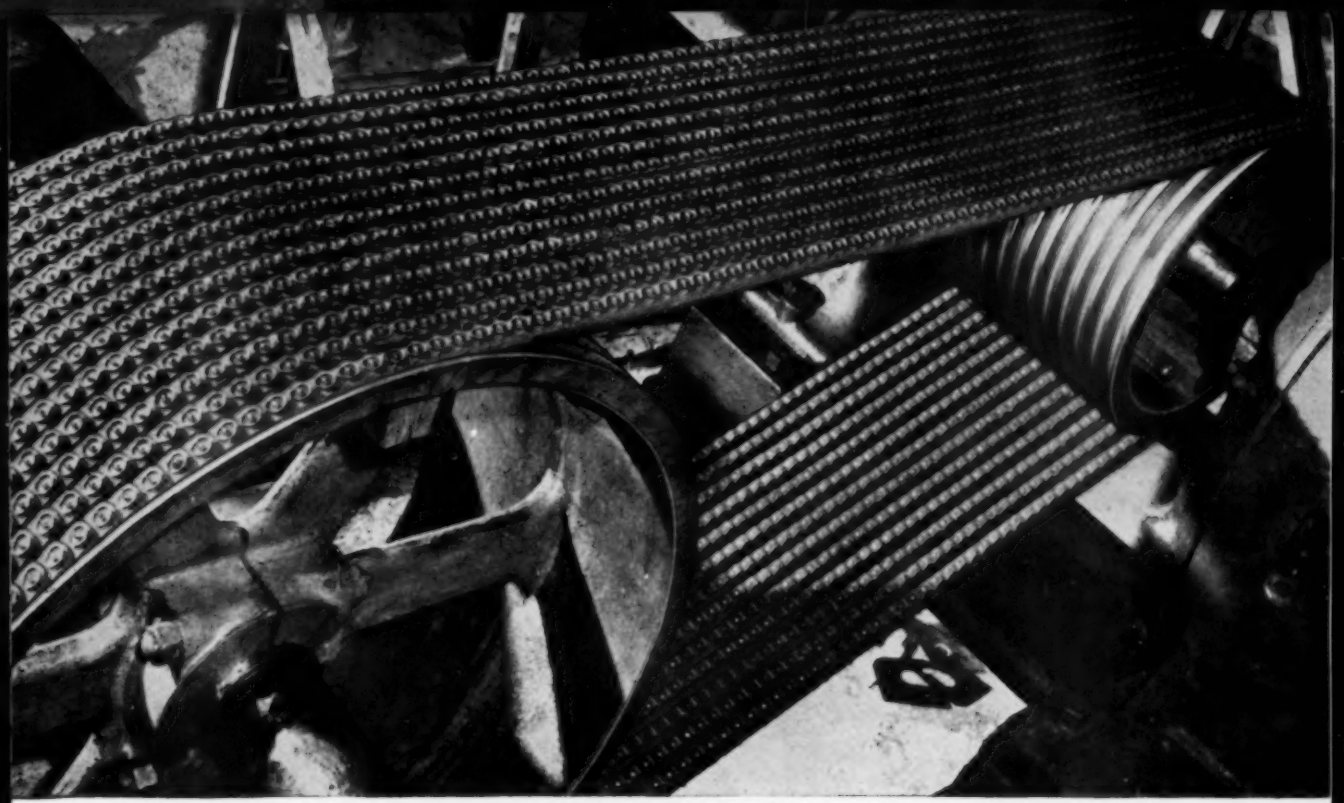
8331 MILL ST., ALLENTOWN, PA.
SALES OFFICES: New York • Chicago • San Francisco
CANADIAN MFR.: Canadian Vickers, Ltd., Montreal, P. Q.

Traylor **ROTARY KILNS**



New Veelos TD & TE Heavy-Drive Adjustable V-Belts Drive Maintenance and Inventory Costs Down!

1 New Veelos TD & TE V-Belts are stronger, more durable!

New stud, cup-washer, T-screw design afford extra strength at points of stress. Greater strength, maximum flexibility mean cooler, smoother running belts! If a belt is accidentally damaged—replace the damaged links—not the entire belt!

2 Patented Veelos TD & TE adjustable V-Belts are easier to change!

They practically eliminate "down-time"! Just uncouple the worn belt or links and put on the new belt or links.

No lengthy production stops! Veelos Adjustable V-Belts give trouble-free performance with a minimum of maintenance required!

3 Veelos belts assure complete inventory in minimum storage space!

Stock just two 100 ft. reels of Veelos TD & TE widths —you have a complete inventory ready to handle *any* D or E belt drives. Just reel off the length desired. And Veelos stores in inches! Save money on inventory, stockroom space, deterioration of unused belts!

VEELOS® THE BALANCED LINK V-BELT

Veelos is known as Veelink outside U.S.A.

Get your free Veelos Data Book; many pages of important information on belt drives. Write to:

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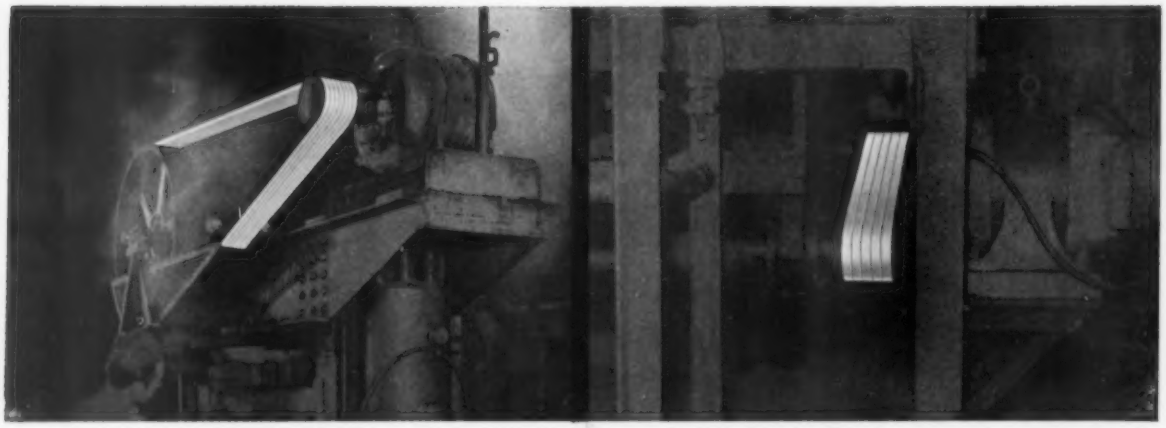
Adjustable to any length • Adaptable to any drive • Balanced power • Constant power • Vibrationless power



Intense heat no problem for Super Belts

This hydraulic press at Hackney Iron and Steel Co., Enid, Oklahoma, shapes red hot steel plate into tank heads.

The flat leather belt formerly used on this type of press, would stretch, slip, and come off. Tightening the belts only overloaded the bearings. For this press, a Gates Super Vulco Rope drive was chosen because it withstands the near-by intense heat, and its extra horsepower capacity permits lighter weight sheaves; thereby reducing load on bearings.

Claude King, maintenance superintendent, reports: "This Gates V-belt drive has operated 8 hours a day for 5 years without lost time due to maintenance."

Super Belts on vibrator last 7 times longer

James Gann, general superintendent of John B. LaGarde, Inc., Anniston, Alabama, reports:

"Practically every condition exists to shorten V-belt life on the vibrator drive of this concrete block machine. The machine starts and stops 4 times a minute. Intense vibration must be absorbed by the V-belts to protect motor and bearings. Sand and concrete, oil and grease all get into the drive.

"With Gates Super Vulco Ropes, we get about 7 times the average life we received from any other make, It is hard to believe that belts can take this punishment, but Gates Super Vulco Ropes do it."

Solve tough drive problems with this super tough V-belt

If present V-belts are wearing out too fast . . . if heavy shock loads . . . oil and heat . . . or other conditions are causing too frequent replacement . . . here's the answer:

Gates Super Vulco Rope—the oil and heat resistant V-belt with 40% more horsepower capacity. Easily handles heavy shock loads.

That means longer V-belt life and *cost savings two ways*—savings on belt replacements and savings on maintenance down-time.

Let a Gates V-Belt specialist help you solve *any* tough drive problem. He'll make recommendations without obligation. Gates offices and distributor stocks are listed in the phone book yellow pages in all major industrial centers. The Gates Rubber Co., Denver, Colorado—*World's Largest Makers of V-Belts.*

The Mark of Gates *Specialized Research*

TPA 104

Gates SUPER VULCO ROPE Drives

Mack diesel dumper used to haul crushed stone and agricultural limestone from the quarry of the Waukesha Lime & Stone Co., Inc., Waukesha, Wis. In operation since 1905, this quarry is presently producing at a rate of 500,000 tons per year.

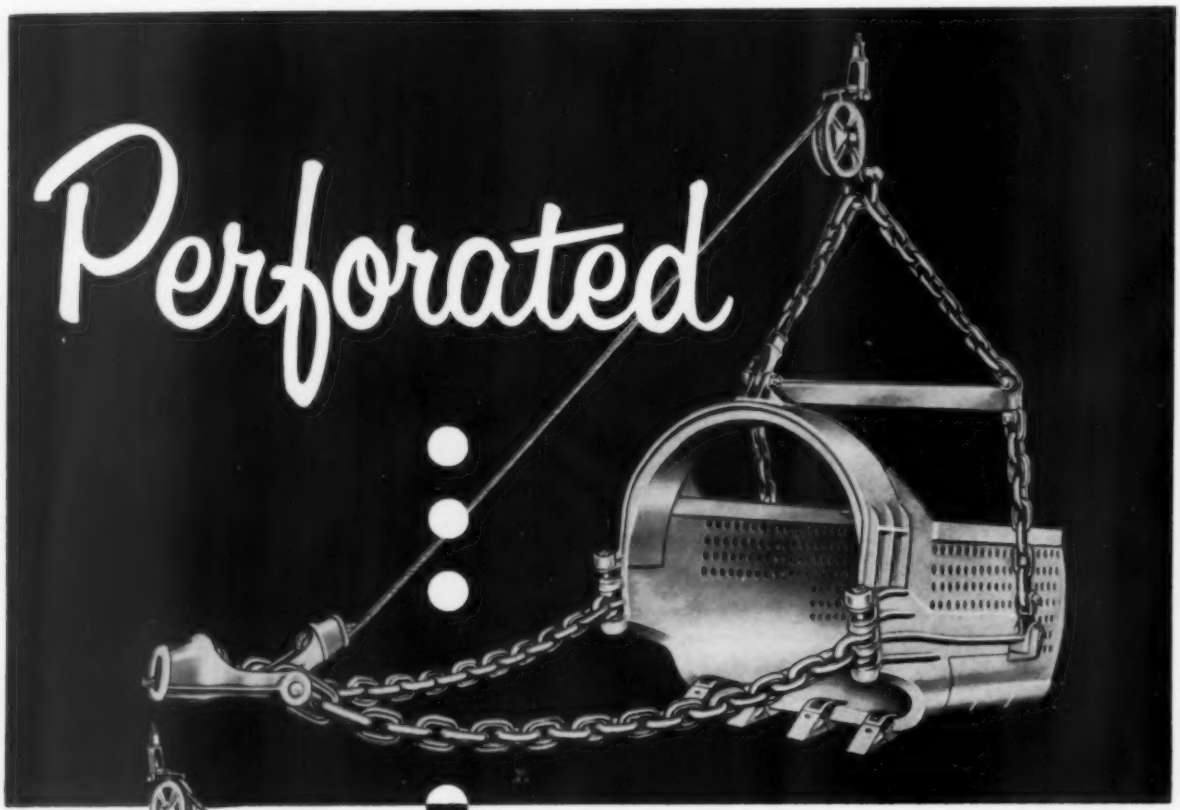
Macks make your other equipment investments pay off

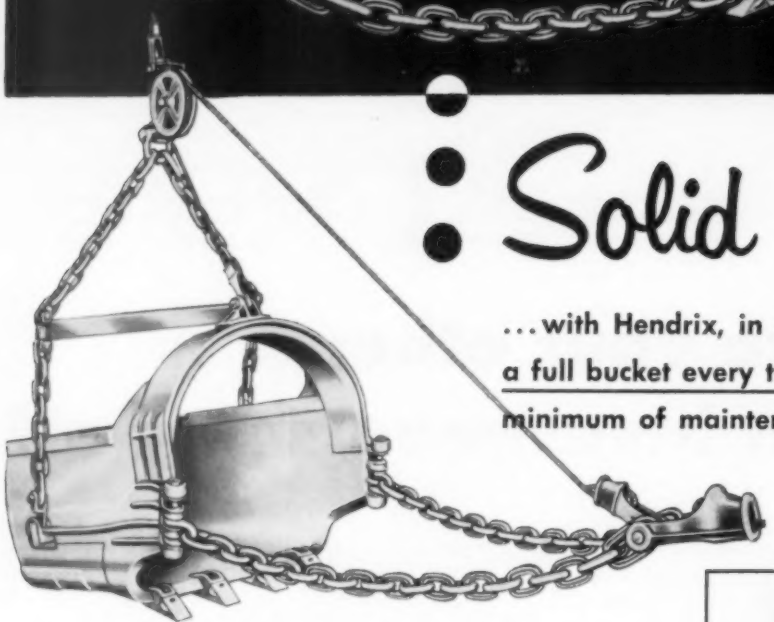
For a work-speeding, profit-making combination, team up your big shovels with Mack trucks.

Macks keep shovels on the go because they make fast hauls between mine or quarry and unloading site. They can be depended upon to meet schedules because Macks don't bog down or break down when the going gets tough. They handle the heaviest loads under the toughest conditions. They require minimum maintenance and provide maximum fuel economy.

Whether you utilize trucks for removing overburden . . . for hauling ore from open pit mines . . . or in quarrying operations—putting Macks on the job will pay off because they make possible the most profitable use of machinery and manpower. Investigate Mack trucks today. Contact your nearby Mack representative.

MACK TRUCKS, INC., Plainfield, New Jersey. IN CANADA: Mack Trucks of Canada, Ltd. 3603





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...with Hendrix, in either type, you get a full bucket every time. This plus a minimum of maintenance results in more profits.

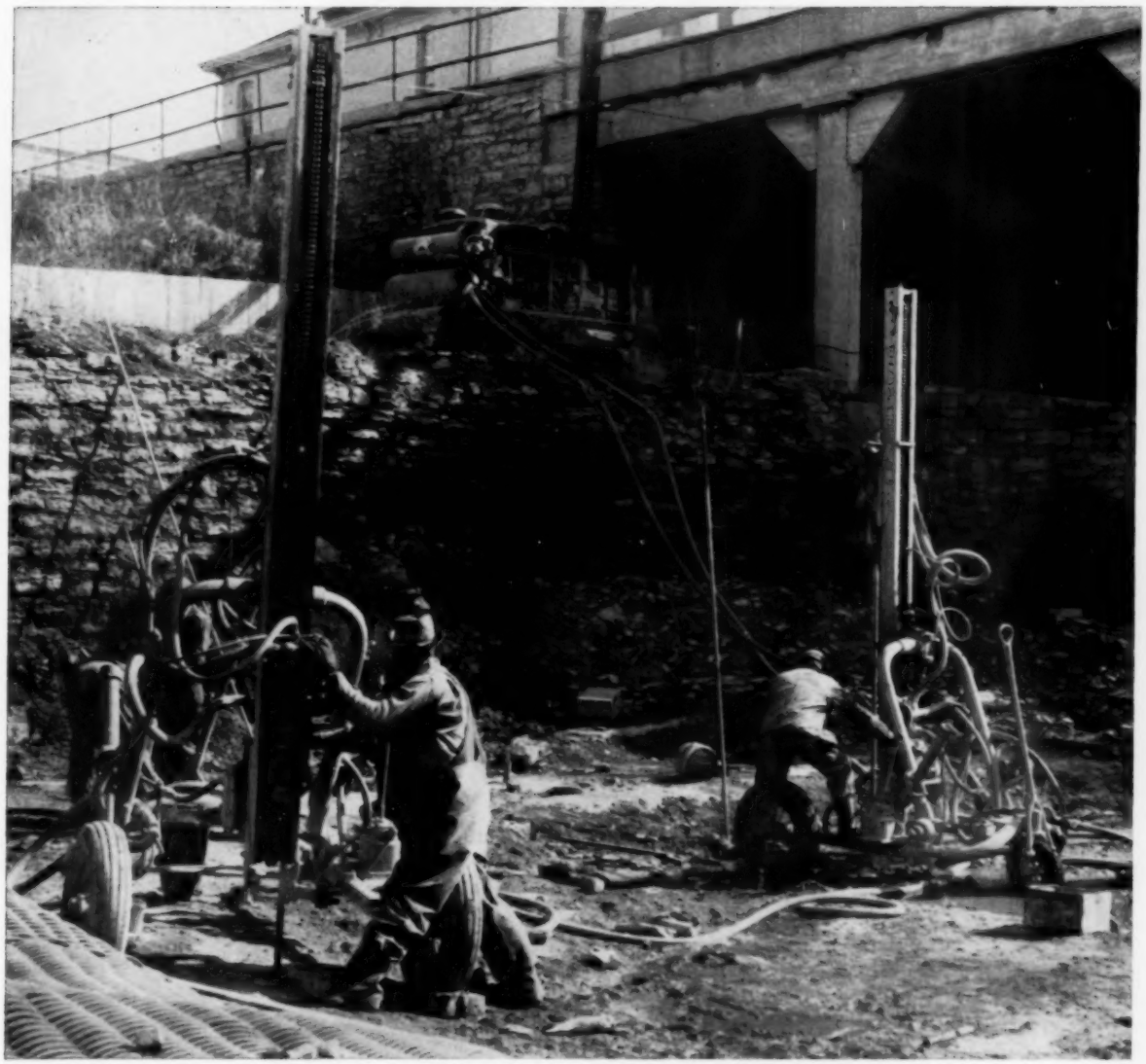
A TYPE FOR EVERY DIGGING PURPOSE

¼ to 40 Cubic Yards

Hendrix Lightweight DRAGLINE BUCKETS

HENDRIX MANUFACTURING COMPANY, Inc.

MANSFIELD, LOUISIANA



500′ PER 9 HR. DAY IN TENNESSEE LIMESTONE: For the rock portion of the 351,000 cu. yd. excavation for Capitol Hill Redevelopment project at Memphis, Tenn., J. B. Michael Construction Co. powered their two wagon drills with a Jaeger rotary "600" compressor. "We start it and never worry about plenty of air for the two wagon drills, averaging 500′ per 8-hour day, without lugging or overheating", says job superintendent David B. Phillips.

Jaeger 600 Rotary . . . *your most efficient power for wagon drills*

A Jaeger "600" rotary compressor produces the same 600 cfm of air as other "600" compressors, *using the same 6-71 GM diesel engine at 100 to 150 rpm slower speed (1650 rpm instead of 1750 or 1800).*

On long hours of steady drilling this slow, cool, efficient operation means substantial fuel savings, fewer fpm of engine piston travel, up to 9000 fewer compressor revolutions every hour you work.

Smaller Jaeger Roto Air Plus® units have this same characteristic of low speed, high efficiency performance. It will pay you to get full details or demonstration from your Jaeger distributor—or let us send you Catalog JCR-5.

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Take Hendrick's 80 years of experience in selecting and specifying the best analyses of steel for the crushed stone industry. Add to it Hendrick's 80 years of experience in perforating plate for vibrating screens and you end up with a combination that can't be beaten.

Hendrick . . . Pioneer Perforator of Special Quality Steels for 80 Years

That's why Hendrick Perforated Plate stands up longer and affords more accurate sizing. No other screening medium can compare to it for uniformity of mesh, for non-blinding clearance and for long, trouble-free service life. Hendrick perforated *H* quality steel is supplied in any desired size or shape of openings.

It can also be furnished flat or corrugated. Write for details.

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for contour and straight cutting

• Granite • Monumental Stone • Marble • Structural Stone

Industry proved GILCO Wire Saws offer the new, moderately priced, SHAPECUTTER, combination contour and straight cutting saw. New sheave hub protects shaft from abrasive. Round steel cover protects sheave, is quickly removable for easy access to wire sawing strand. Diaphragm type pump assures constant flow of correct abrasive mixture.

There's a GILCO Wire Stone Saw to meet all contour and/or straight cutting requirements. Write for bulletin 200. Dept. PQ

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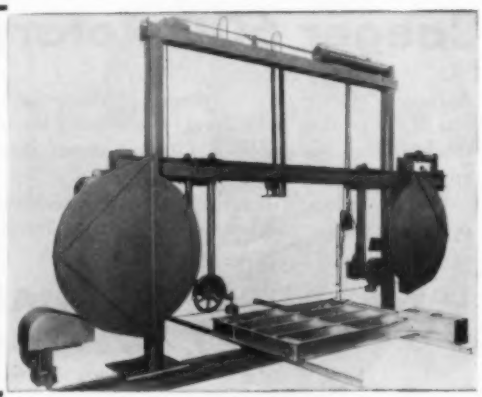

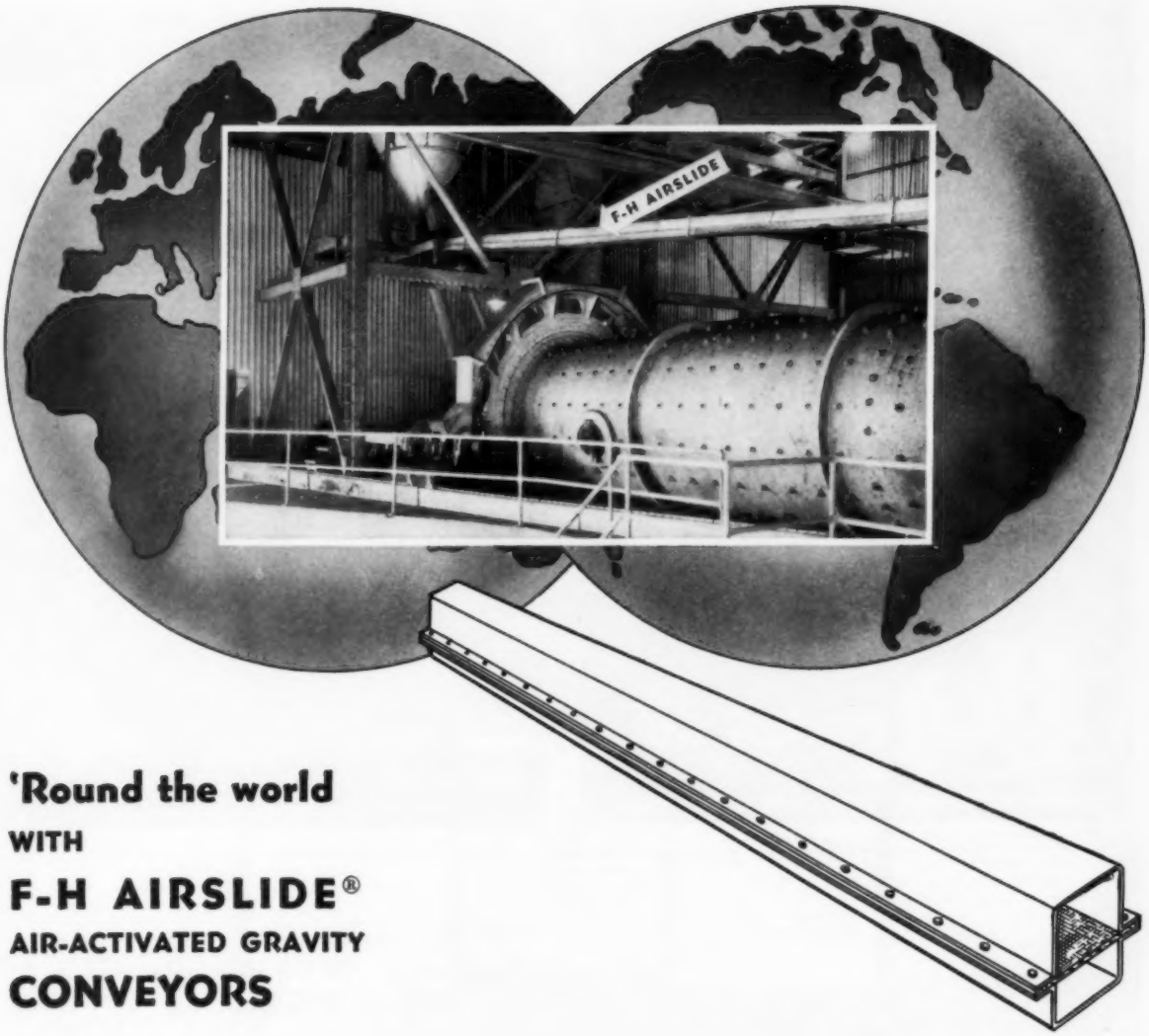

'Round the world
WITH
F-H AIRSLIDE®
AIR-ACTIVATED GRAVITY
CONVEYORS

North, South, East, West, to the four corners of the earth, F-H Airslide® air-activated gravity conveyors are handling thousands of tons of many types of material, and, they're doing it at the very lowest cost per ton.

There are many good reasons for the universal acceptance of this conveyor. Simplicity of construction and installation. Comparatively light in weight, it can be suspended from overhead or placed on the floor. No moving or working parts, maintenance is nil. Nothing moves but the material and air. Benefits are constant and substantial.

Power—exceedingly low. Small fan or blower is sufficient to supply air at low pressure to fluidize the material being handled, which flows by gravity on a slightly inclined plane, the degree of slope depending upon the material conveyed.

Illustrated above is an Airslide installed in a cement plant in the Phillipine Islands, conveying oversize material (rejects) in the finish grinding mill circuit from separator to mill for further grinding. Airslide is 10″ in width and 50′ in length and handles 500 bbl. of finished cement tailings an hour. The only power required is a 2-hp. blower. Quiet, clean, efficient, low-cost conveying and, no moving parts to wear or get out of order.

The next time you are in need of conveying dry, fine materials, consult us. It may mean substantial savings you never thought possible.

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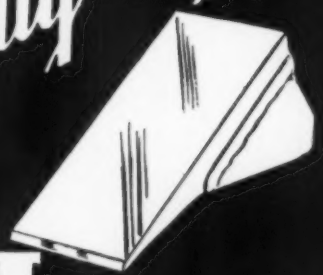
Teeth that really dig!



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Furnishes a positive seal for round flexible joints. Used by leading dredging and hydraulic sand-and-gravel operators, and the U.S. Engineering Corps. This Multi-use chain sleeve clamp is easy to apply... positive in action. Write for illustrated folder, today.

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9th Ave. at 4th, Mendota, Illinois

Each month, PIT and QUARRY publishes, not one, but *two* classified sections—a big "Broadcast" section in the back-of-the-book and a smaller section in The Concrete Manufacturer. (In this issue, you'll find the Broadcast pages starting on page 237, the "CM" section on page 227.)

A number of our classified advertisers already have tried "hitting 'em with both barrels"—with gratifying (and profitable) results. If you have used equipment to sell—or are looking for something to buy—related to both the quarrying and concrete industries, why don't *you* take advantage of this double opportunity?

Rates are printed at the top of each section, or write today for attractive contract schedules.

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At these TOUGH WEAR points, specify "THE TOUGHEST STEEL KNOWN"*

Sprockets
Amsco® Manganese Steel sprockets and replaceable rims, hardfaced with Amsco "Economy Hardface C", give 3 to 4 times the life of ordinary sprockets.

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Automatic build-up, then hardfacing with Amsco AW-79 Rod, gives twice the wear of original parts, saves 50% on replacement.

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Manganese Steel construction, with grouser bar integrally cast, and holes counter-sunk so bolts can be re-used. For temporary repair, grouser bar is torch cut and welded to shoe.

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Corner inserts of Amsco Manganese Steel add extra service life to blade. Amsco HF-40 hardfacing further increases wear resistance.

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Amsco Manganese Steel gives longer lasting "bite". Amsco HF-40 is ideal for hardfacing.

*AMSCO MANGANESE STEEL . . . plus AMSCO HARDFACING

Shown above are just a few of the "tough wear" points where Amsco products can save you money. Whether for original parts, or for build-up and hardfacing, specify Amsco Manganese Steel and Amsco Hardfacing for maximum operating economy.

We'll be glad to give you full information on Amsco Tractor Parts, Hardfacing Materials or Automatic Welding Machines. Just call your nearby Amsco representative, or write us direct.

OTHER AMSCO PRODUCTS

DIGGING: backhoe buckets—dippers and parts—repointers—dragline bucket parts—dragline chain—sheaves—pinions.

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Experienced contractors will recognize time and money-saving coordination in use of heavy equipment in this picture of an Oman Construction Company, Inc. highway job.

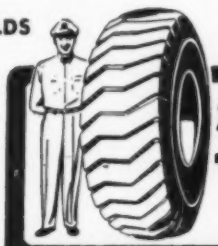
Southern Tire Company is maintaining the drive tires on every piece of equipment on this job . . . another way that Oman's saves time and money.

Pickup and delivery, at the job site after work hours, by Southern Tire representatives will help you get the most from your equipment by minimizing downtime. Southern Tire's giant retreads help you save money on tire replacements, as well—savings up to 40% compared to the cost of new tires.

Let Southern Tire retreading service help you. Call your tire dealer now and specify Southern Tire retreads.

ROCK SERVICE, TRACTOR TYPES OR RIB TREADS
All sizes from 1100 x 24 to 2700 x 33, and new sizes 29.5 x 25 and 29.5 x 29.

SUPERIOR THREE-SECTIONAL MOLDS
Three—Sectional molds assure no buffing to breaker strips, regardless of growth.



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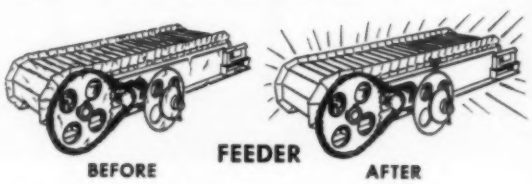
ADMIRO HEAT TREATED ALLOY STEEL *cuts maintenance costs*

"Apply ADMIRO" to feeders—that's the modern economical way to provide effective defense against severe abrasion and heavy impact. Many industrialists use this tested-and-proved high tensile alloy steel to insure longer machine service life, with less down-time.



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Intricate Shapes Cut to Specifications.

Recommended Applications:
Relining and repairing truck beds, crushers, hoppers, wear liner plates, buckets, dirt and rock recovery equipment. Special uses in Mining, Quarrying, Cement and Aggregate Plants.
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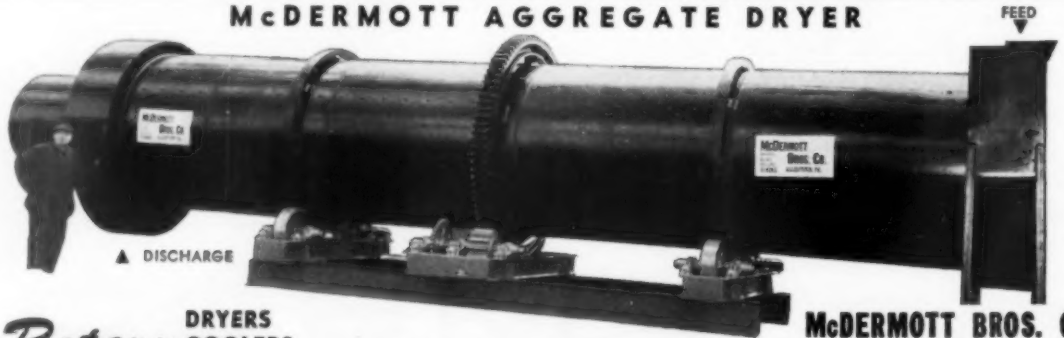
McDERMOTT AGGREGATE DRYER



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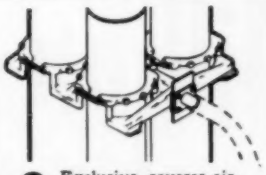
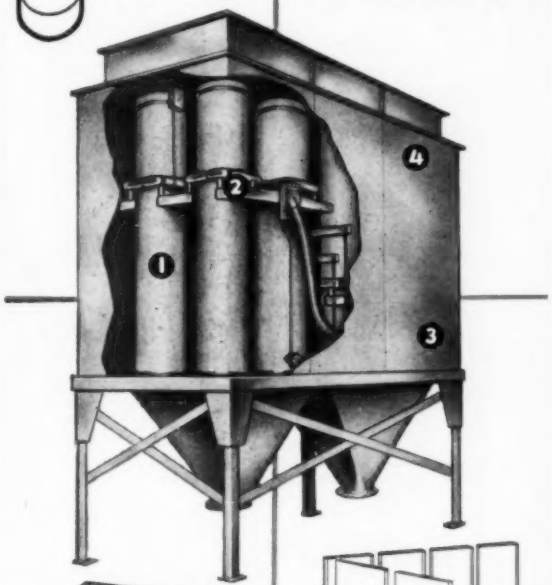
Write for Information

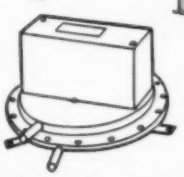
McDERMOTT BROS. CO.
Established 1895
Allentown, Pennsylvania

1 Uniformly dense felt filter bags... of wool or synthetics...produce maximum filtering efficiency yet have 6 times flow rate of ordinary woven filter material. Tiny pores catch and hold even sub-micron-sized particles. Bags measure 12″ in diameter... up to 18′ in length.

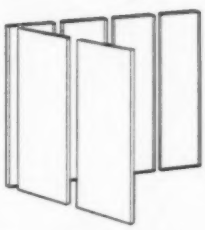


2 Exclusive reverse-air-jet action cleans entire bag area uniformly and automatically. Blow rings* travel up and down length of bag exterior . . . blowing through bag to remove accumulated dust from bag walls. Automatic cleaning never interrupts peak filtering efficiency.





3 Automatic pressure switch* eliminates overcleaning . . . prolongs bag life. Switch controls blow ring operation. Above normal pressure loss actuates rings which stop when pressure loss normalizes. Automatic self-cleaning occurs as often or as seldom as needed.



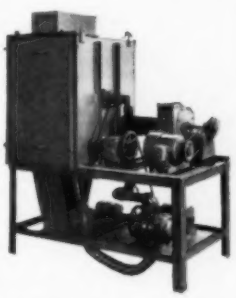
4 Prefabricated Aeroturn can be installed in one-quarter the time required by ordinary dust collectors of similar capacity . . . in half the space. Aeroturn arrives from the factory in easy-to-assemble prefabricated sections.

50% LOWER MAINTENANCE COSTS and 99.9%+ EFFICIENCY

with KOPPERS Series 12 Aeroturn Dust Collectors

Up To 75% Lower Installation Costs . . . Up to 50% Less Space! You can get rid of dollar-consuming dust far more economically with a Koppers Series 12 Aeroturn than with a conventional collector. The Aeroturn Dust Collector costs you less to install and maintain . . . occupies far less space. A Koppers Series 12 Aeroturn operates continuously and automatically at highest filtering efficiency.

Aeroturn's remarkably high filtering efficiency sends your plant and machinery maintenance costs way down. Your heating and cooling costs fall because you can recirculate air . . . cleaner than outside air. Koppers Series 12 Aeroturn Dust Collector is available with from 4 to 64 filter bags . . . Aeroturn's capacities range from 1,000 to 60,000 CFM. It only takes a few minutes of your time to discover for yourself the many cost-saving features of the Koppers Series 12 Aeroturn.



Factory-assembled and test-operated, Koppers Model D Aeroturn Dust Collector combines features of Series 12 with unusual compactness. Capacities range from 500 to 4,800 CFM.

AEROTURN DUST COLLECTORS

KOPPERS®

Koppers Company, Inc.
Metal Products Division
Industrial Gas Cleaning Dept.

***Engineered* Products**
Sold with *Service*

***Hersey Patents**

Mail this coupon today!

KOPPERS COMPANY, INC., Industrial Gas Cleaning Dept., 4508 Scott Street, Baltimore 3, Maryland.

Gentlemen: Please send me a free copy of your Aeroturn Booklet with descriptions, drawings and photographs. ☐ Series 12 ☐ Model D

Name..... Title.....

Company.....

Address.....

City..... Zone..... State.....

Limestone Users Attention!

100 Million Tons of Pure Limestone

READY FOR YOU AT EASILY ACCESSIBLE POINTS ALONG THE N&W . . .

N&W geologists have discovered in the *Land of Plenty* a vast new source of limestone of almost unbelievable purity. Core drillings have revealed deposits of more than 100 million tons in mineable beds of over 100 feet in thickness. Scientific laboratory tests prove this limestone's unusually high quality and also clearly indicate the uses for which it is best suited.

Typical analyses are shown below, but our specialists will be glad to consult with you regarding your specific needs. If you need limestone or limestone products, there's no doubt about it — the best location for your plant is in the *Land of Plenty.*

Why settle for this . . .

Undesirable magnesium carbonate secreted by fossil algae

Phosphorous, a very undesirable substance in limestone

Silica, occurring here in a nodule of flint, commonest of objectionable impurities in limestone

Vein of pure calcium carbonate. Too many such veins cause limestone to crumble when fired in dry kiln.

Styolites . . zig-zag films of common impurities such as iron, sulphur, magnesia, etc.

When you can have this? . . .

This is the premium-grade limestone which is waiting for you in *The Land of Plenty.* This limestone, in deposits aggregating more than 100 million tons, is almost 100% *pure.* It is the best grade for chemical lime, calcium carbide, open-hearth steel-making and other important purposes. See the analyses below:

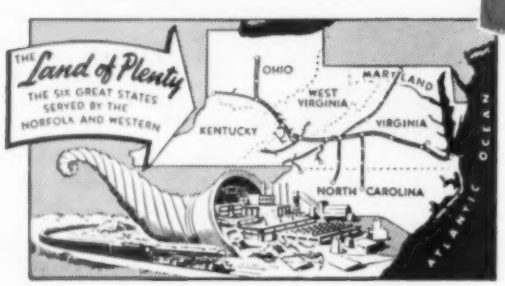
And here are typical analyses *

	DNL-1-1	DNL-1-2	DNL-1-3
SILICA (SiO_2)	.36%	.30%	.34%
IRON OXIDE (Fe_2O_3)	.072	.043	.049
ALUMINA (Al_2O_3)	.21	.20	.19
LIME (CaO)	55.00	54.90	55.40
MAGNESIA (MgO)	.65	.62	.51
SULPHUR (S)	.012	.011	.015
PHOSPHORUS (P)	.006	.006	.009
IGNITION LOSS	43.20	43.50	43.20
CALCIUM CARBONATE (Calculated)	97.90	97.72	98.51
MAGNESIUM CARBONATE (Calculated)	1.36	1.30	1.07

*Report prepared by Pittsburgh Testing Laboratories, Pittsburgh, Pa.

For complete information, furnished in confidence and without obligation, write, wire or call:

L. E. WARD, JR., MANAGER
INDUSTRIAL AND AGRICULTURAL DEPT.
Drawer PQ-721, (Telephone 4-1451, Ext. 474)
Norfolk and Western Railway
ROANOKE, VIRGINIA



Norfolk and Western RAILWAY

For producers of Concrete Building Units, Pipe and Ready-Mixed Concrete

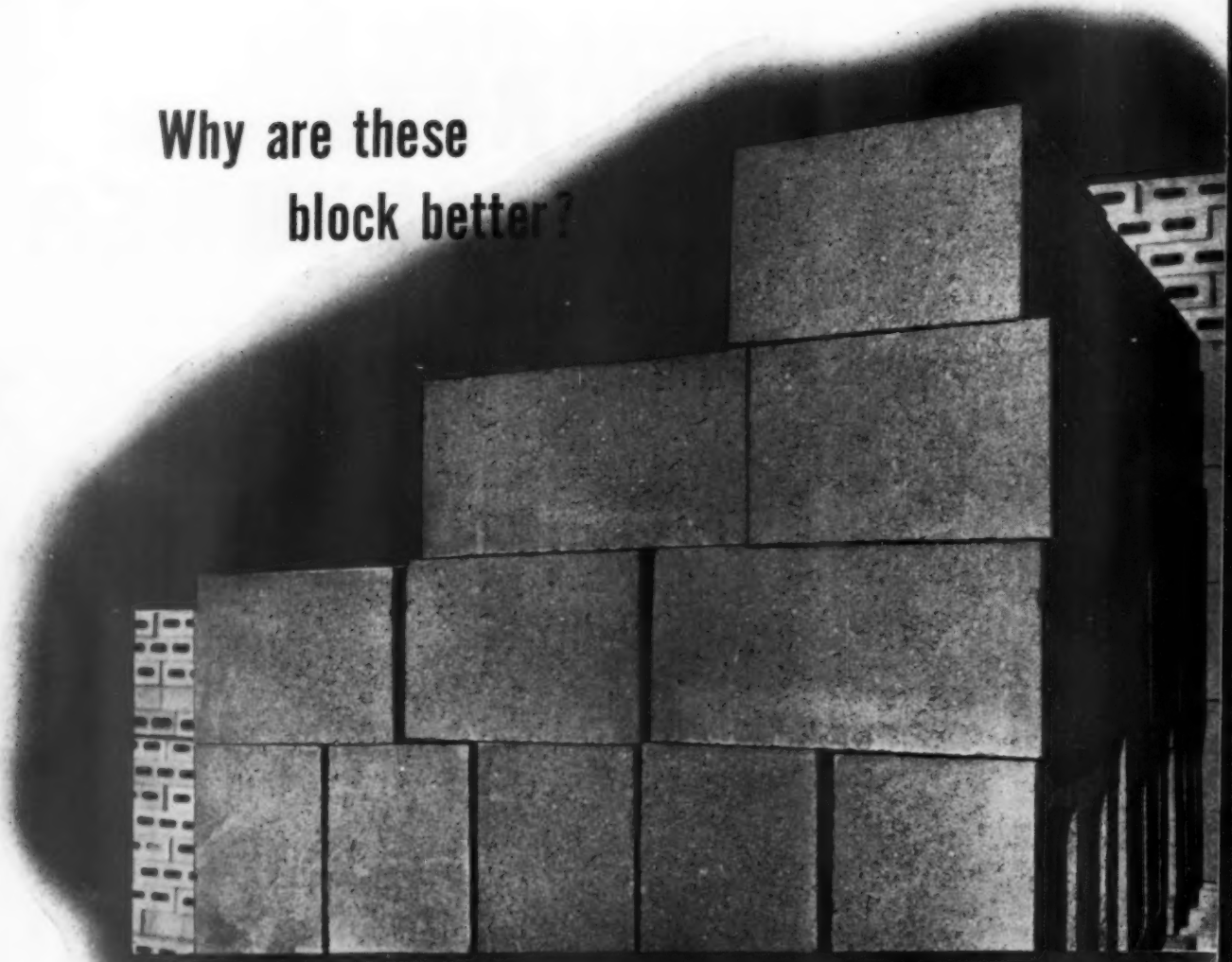
AUGUST 1956

THE CONCRETE MANUFACTURER

A SPECIAL SECTION OF PIT AND QUARRY

Facade of New Headquarters Building of Maule Industries, Inc., Miami, Fla. (See Page 172.)

Why are these block better?



Because Duraplastic* cement gives richer texture, cleaner edges

Customers are quick to recognize the improved appearance of block made with Atlas Duraplastic air-entraining cement. Concrete products look better and sell better when made with Duraplastic. That's because they have more uniform appearance, true edges, and are more resistant to weather. Naturally these better block make better masonry. That's why customers prefer block made with Duraplastic cement in their masonry buildings.

YET DURAPLASTIC COSTS NO MORE than regular cement—requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write:

UNIVERSAL ATLAS CEMENT COMPANY

UNITED STATES STEEL CORPORATION SUBSIDIARY

100 PARK AVENUE, NEW YORK 17, N. Y.

*"DURAPLASTIC" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

D-186

AIR-ENTRAINING PORTLAND

Atlas® Duraplastic Cement

MAKES BETTER CONCRETE AT NO EXTRA COST

OFFICES: *Albany · Birmingham · Boston · Chicago · Dayton · Kansas City · Milwaukee · Minneapolis · New York · Philadelphia · Pittsburgh · St. Louis · Waco*

United States Steel Hour — Televised on alternate Wednesdays — See your local newspaper for time and station.

Save up to $500.00

ON YOUR NEXT GAS FORK TRUCK

Priced about 25% under any other gas trucks in the popular 4000 lb. capacity, the Yardloader now brings cost-saving fork truck operation within the reach of practically every company with yard-handling problems. Travel speed approaching 14 miles per hour, large pneumatic tires, exceptionally high ground clearance and oscillating trail axle make it the ideal truck for outdoor service over large unimproved or semi-improved areas.

Heavy-duty industrial engine of proven make, 4-speed transmission and extra-heavy drive axle assure ample power for top performance under any conditions. Hydraulic lift to 122 inches, automotive-type steer, convenient controls and excellent driver visibility are a few of the features contributing to safety and ease of operation.

Get all the facts—and save up to $500.00 on your next gas fork truck. Write to The Baker-Raulang Company, 1215 West 80th St., Cleveland 2, Ohio.

Subsidiary of Otis Elevator Co.

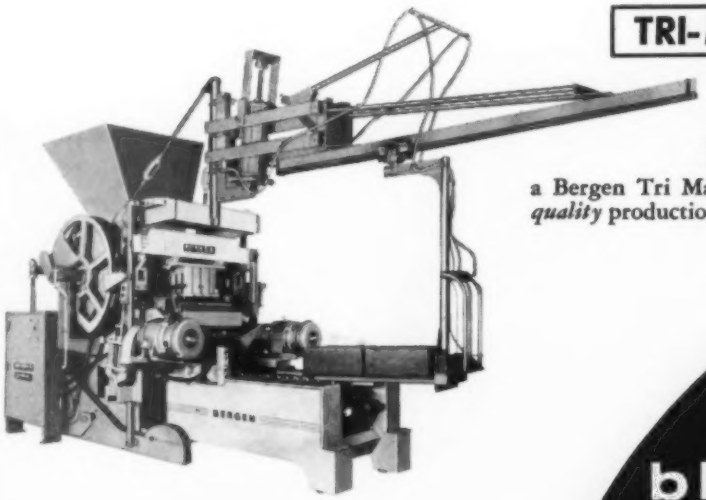
BAKER

"Yardloader"

TRADE-MARK

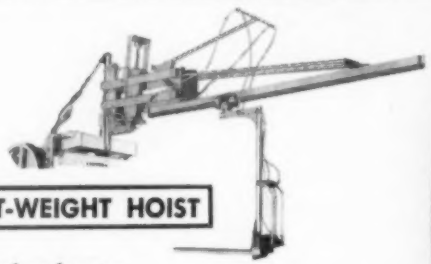
56Y4

TRI-MATIC BLOCK MACHINE



a *truly* HIGH PRODUCTION machine! Rugged, Powerful, Dependable . . . a Bergen Tri Matic is your assurance of maximum *top quality* production, for many years.

MORE
block plants are buying
MORE
BERGEN
EQUIPMENT
Every day!

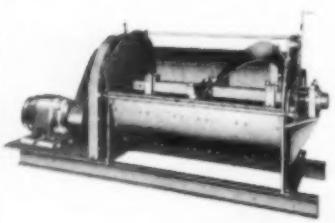


LIGHT-WEIGHT HOIST

The low-headroom feature (requires only 12 ft.) plus the new powerful magnetic plate makes the BERGEN Hoist a real high-production asset to any block plant.

ZeroMatic
HEIGHT & DENSITY CONTROL

The BERGEN ZERO-MATIC automatically controls aggregate volume to the mold and the vibration period under pressure. It maintains precise *Quality Control* on the Density, Texture, and Height of the blocks produced on your block machine.



BATCH MIXER

Unusually heavy construction — you get longer, trouble-free life from genuine Ni-Hard liners and blades, as well as double life from the exclusive reversible 130-tooth main gear. All combine to assure superior mixing for many years.

Phone "Collect" or write for complete details and prices of these or any other Bergen products.

BERGEN
MACHINE & TOOL CO., INC.
NUTLEY, NEW JERSEY

Cable Address: "BERGENCO" (Nutley, N. J.)

The CONCRETE MANUFACTURER

August 1956

They Still Say "Cement Sidewalks"!

DESPITE the informative publicity accorded the technological advancement made in concrete, we have failed to put over an important point—people still persist in using this idiomatic misnomer. While some might feel that we are overzealous in our meticulous demand that concrete be called "concrete", and cement "cement", the following quote from a recent U.P. news dispatch on prestressed concrete really irked us: "A new technique in the manufacturing of *cement* has produced cheaper, stronger, and safer structures than those built with the familiar reinforced concrete." There is no excuse for such a palpable error on the part of an enlightened (?) press.

We fumed over this for a while (after apprising the editor of the facts) until it brought to mind how one national agency—the Federal Trade Commission—is also hurting the cause of concrete by similar tactics. One of the new trade practice rules of that agency says: ". . . the only product which can be sold or advertised as 'brick' or 'structural tile' must be: (1) made primarily of clay or shale or a mixture of the two; and (2) must be fused together as a result of the application of heat, or 'hard burned' in a kiln." In other words—"When is a brick (concrete) not a brick?"

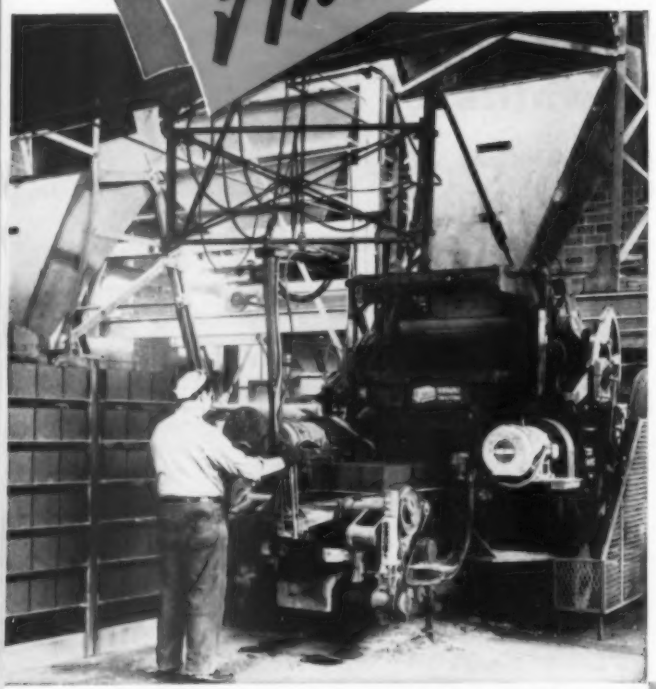
The application of this rule requires the producers of concrete brick to use the composite term, while it allows the clay brick industry to usurp the single name "brick" for their product. The same commission outlines rules for the "Brick and Structural Clay Tile and *Allied Industry*"—and includes manufacturers of concrete products in the *latter* category. In the ensuing fight against such inaccurate and discriminatory legislation, we commend the N.C.M.A. for its stand for the rights of the concrete masonry industry, which, while it furnishes perhaps 65 percent of the structural wall volume, is forced by definitive edict to be dubbed an "allied industry". Another case, indeed, of the tail wagging the dog.

The implications found in these instances—trivial or serious as they may be—simply point out that common usage of certain inaccurate terms sometimes results in harm to an industry which has failed to periodically correct the public's understanding of those terms. We can all visualize what "poured concrete" means to the layman, who is prone to think that if it flows, it is o.k. It will take a heap of common-sense advertising to change his mind, just as it will take a lot of down-to-earth plugging to make him say "concrete sidewalk", or to make rule-passing agencies recognize the need of fairness in defining a product or an industry.

Ray L. Peck

This is the 133rd of a series of ads featuring leaders in the Concrete Products Industry who are stepping up block production with Besser Vibrapac machines.

Another BESSER BOOSTER



One of the five Besser Vibrapacs installed in the two Faber block plants. Latest Vibrapac put in operation, April, 1956.

Vibrapacs are TOP Producers at this New Jersey Block Plant

Faber Cement Block Company, Inc., at Paramus, N. J. installed their first Besser Vibrapac in 1942. This machine was so successful in producing high quality block on a fast production basis, the company added more Vibrapacs as the need arose for additional equipment. Today they operate five Vibrapacs—three in plant No. 1 and two in plant No. 2.

Albert Faber, Secretary-Treasurer of the Faber Company speaks very highly of his Vibrapac machines. *"We think they are the best."* This candid opinion is backed by more than 35 years of block making experience. Currently, production is at a peak at the two Faber plants. Block in all types and sizes, including split block, are supplied for homes, business establishments, industrial plants, schools, etc.

If you want to step up production of high quality block, look into Vibrapacs. Phone the Besser representative nearest you, or write:

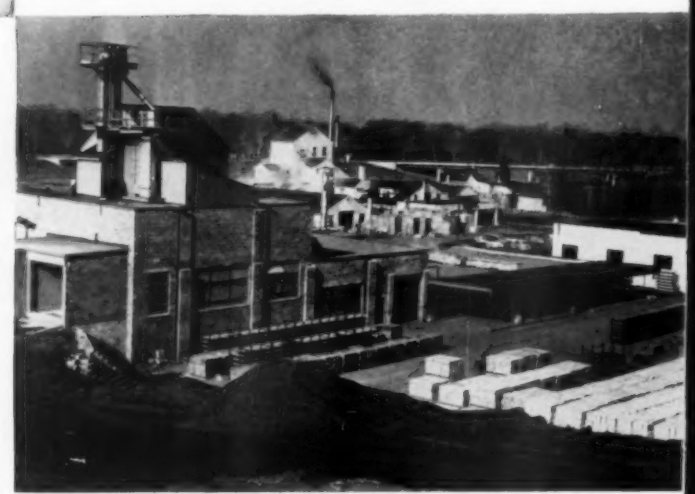
BESSER COMPANY • Box 131, Alpena, Mich., U.S.A.

Complete Equipment for Concrete Block Plants

Local bowling alleys recently completed using split block for both exterior and interior walls. Combines beauty with permanence, at low cost.

SPLIT BLOCK

—the split block with quarried stone appearance is proving popular in the New Jersey area. Made from block produced on a Besser Vibrapac and split on a Bes-Stone Block Splitter.



Exterior view at Faber Cement Block Company, Paramus, N. J. The original plant is in the background. New plant, in foreground, was built in 1955.

NATIONAL HOUSING CENTER
WASHINGTON, D. C.
(Sponsored by NAHB)

Besser Company maintains a permanent exihibit at the Washington Housing Center. Be sure to visit this fine display of concrete masonry.

BESSER VIBRAPAC

first in concrete block machines

A 8863-1PBC

News of the Concrete Industries

Texas Industries Acquires Minneapolis Products Firm, Midwest Sakrete Rights

Texas Industries, Inc., has acquired all assets of Twin City Concrete Products Company of Minneapolis, along with that company's exclusive rights to sell Sakrete premixed dry concrete in eight middle western states.

Announcement of the purchase was made jointly by J. M. Lambert, Twin City president, and Ralph B. Rogers, president of the Dallas company. Purchase price was not disclosed.

Included in the acquisition are plants at Minneapolis, Des Moines, and Kansas City, Kansas, and machinery for a fourth plant at a location to be determined, Mr. Rogers said.

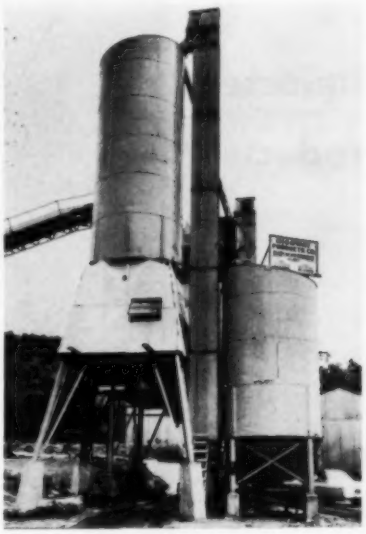
The Minneapolis company produces packaged ice sand in addition to Sakrete. Marketing area for Sakrete includes Minnesota and Iowa, major portions of Kansas, Nebraska, North Dakota, South Dakota, and approximately half of Wisconsin and Missouri.

Great Western Laramie Plant Producing Light Aggregates

A recent announcement from Great Western Aggregates, Inc., Laramie, Wyo., tells of the excellent progress made in the construction work for the new plant to produce expanded shale aggregates. Four new storage silos have been completed; a new storage area for raw materials is under way; the rotary kiln has been relined; and beams and columns for the new construction areas have been precast, all such members made of concrete in which the trade-named Idealite aggregates were used. The company is an affiliate of Ideal Cement Company, Denver, Colo.

The management of the company feels that the plant will be in actual production before the entire construction is completed.

Ernest M. Hammond, who introduced ready-mixed concrete into western New York, died unexpectedly on July 28 while he was on a fishing trip in North Bay, Ont., Canada. He had been president and general manager of the Gravel Products Corporation, Buffalo, N.Y., since 1940.



At site of the first commercial atomic plant being built for the Atomic Energy Commission and Duquesne Light Company at Shippingport, Pa., near Pittsburgh, capacity operation of this 600-bbl. high bin and 400-bbl. low bin Blaw-Knox portable cement plant has run as high as 1,500 bbl. a day. Peak production was achieved during pours of 4,000-lb. footings for the historic project. After the concrete requirements of the plant have been completed, the Blaw-Knox unit, supplied by Dravo-Doyle of Pittsburgh, will be dismantled and moved to the site of the new project being handled by Highway Products Company, Pittsburgh.

Coming Events

October 22-26, 1956—Chicago. 44th National Safety Congress and Exposition. Conrad Hilton, Congress, Morrison, and La Salle hotels.

November 26-28,1956 — St. Louis. Fifth annual short course of instruction, American Concrete Pipe Association. Chase Hotel.

February 25-28, 1957—St. Louis, Mo. 37th annual convention, National Concrete Masonry Association, and 10th biennial show, Concrete Industries Exposition. Kiel Auditorium.

2-Way Economy Achieved By Vermiculite Insulation— In Building, Cooling Costs

Builders who are offering air conditioning in concrete block homes can save two ways by filling cores of blocks with vermiculite insulation, according to Clifford Warren, vice-president, Black and Ryan Air Conditioning Company, Phoenix, Ariz.

Citing two homes constructed in Phoenix, Mr. Warren stated that where Zonolite vermiculite was used in the cores, a 3.2-ton air conditioning unit would do the job which would have required a 4-ton unit in an uninsulated house. Savings in initial equipment amounted to $250. Since only $120 worth of vermiculite was employed in blocks, a net savings in construction of $120 was accomplished.

According to Mr. Warren, savings in operating costs would amount to $40 a year in the house insulated with vermiculite, figuring $50 per ton for operating costs yearly. Mr. Warren gave his report to the recent annual convention of the Vermiculite Institute in Chandler, Ariz.

L. L. Sphar Named to Staff Of Washington State Assn.

The appointment of Leland L. Sphar as engineer-manager of the Concrete Products Association of Washington has been announced by James W. Sullivan, president of the association.

Mr. Sphar will be available for technical consultation in the field of concrete sewer and culvert pipe, and concrete masonry and precast products. He expects to spend much time working with engineers and architects.

Before joining the association Mr. Sphar was research engineer for the legislative joint fact finding committee on highways, streets and bridges. He has also served as public works engineer for Olympia, Wash., and as a highway economist in the planning survey section for the Washington State Department of Highways.

A fire in the plant of the Edgewood Pipe and Block Company near Delmar, Del., on June 20 destroyed most of the installations and equipment. Only the office and the curing rooms were saved.

Showroom of Concrete

Maule's Miami Headquarters Models Company Products

A rear view of the headquarters building of Maule Industries, Inc., showing the interesting effect of the cross-grid louvers in the center section.

FEATURING throughout its construction the many precast concrete members in which the company specializes, the new headquarters building of Maule Industries, Inc., Miami, Fla., is in itself a most eloquent salesman. Few companies have realized a better opportunity, by virtue of site and architectural uniqueness of design, to display their wares.

The outstandingly beautful structure, prominently located on upper Biscayne Boulevard overlooking the bay (see our cover picture), is built entirely of concrete. Three stories high—with a provision in the design for a fourth when needed—the building utilizes precast concrete joists and Dox concrete planks for the floor and roof skeleton structure.

The exterior is also composed of precast concrete slabs for the walls, with an architectural tracery of extended precast concrete louvers along the window levels of each floor. Tempering this bold treatment and fitting ideally into the scheme of color which typifies Miami, the exterior surfaces, both walls and louvers, are finished in a deep buff shade of Chattahooche River gravel. The decorative effect of the gravel-faced wall slabs is further enhanced by the insertion of tiny mosaic tiles, another product of the company, under each window.

Aside from the architectural decoration provided by the concrete louvers, they also serve in a very practical way in aiding the air-conditioning of the building, which is complete throughout the entire structure. According to the architects, Pancoast, Ferendino, Skeels and Burnham, the use of the louvers probably account for a saving of about one-third of the cost of the air-conditioning operation. As the louvers are set at an inclined angle, they prevent direct rays of the sun from entering the windows and thus eliminate the necessity of having venetian blinds, an additional saving not usually accomplished in Miami office buildings.

Structurally, the exterior wall slabs range in width from 6 to 8 ft. and run from 8 to 14 ft. in height, having been fitted into the modular construction of 2-ft. multiples in dimension, which governed the architectural layout throughout the building. The use of this system of design also permitted all windows in the building to be identical in size, an arrangement which simplified construction and maintenance and eliminated poorly lighted interior areas. The concrete joist and floor plank system used in the structure permit long-span office space with the minimum necessity for partitions. The central tower of the building extends upward an additional story in height, the extra space being used for the air-conditioning equipment and water tanks. At the rear the exterior of the tower is faced with a cross-grid of horizontal louvers extending to its four-story height. This arrangement produces an unusual architectural effect, as will be seen from the accompanying picture.

Comfort and convenience were keynotes in the interior layout of the Maule building. Since occasional cool weather occurs in Miami, the building is centrally heated, and with the air-conditioning, an even temperature and humidity are constantly maintained. All the executive offices in the building have built-in furniture and cabinets of walnut. Rearrangement of desks or other working space can be done easily without costly utility alterations; the type of conduit in the floors permits outlets for telephones and electricity at frequent intervals. All interior walls are beautifully finished in two styles of Maule mosaic tile, and all floors are finished in Maule's Venezuelan concrete tiles of varying shades.

Concrete parking areas for 75 cars to the north and rear of the building are surrounded by natural landscaping and shade trees. Wide access lanes connect the parking areas with Biscayne Boulevard.

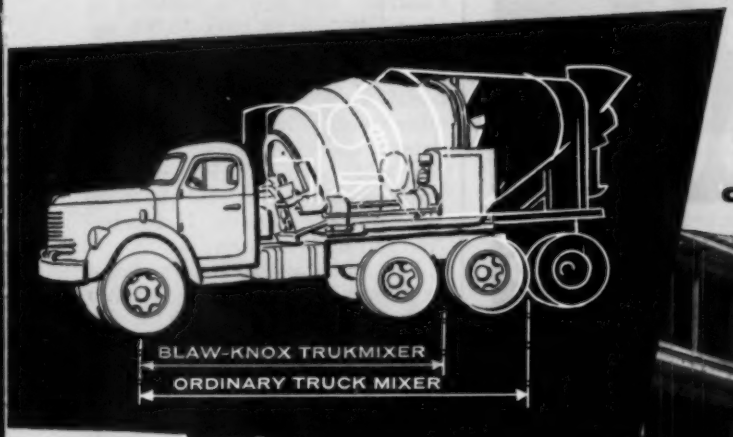
American Marietta, Neville Collaborate on Big Job

Construction of Pittsburgh's county-wide sewage disposal system, involving some 300,000 lineal ft. of 66-in. diameter concrete pipe, has created a new industrial combination of two pipe companies—the Neville Concrete Pipe Company of Neville Island, and the American Marietta Company of Chicago. Facilities will be set up on Neville Island for the manufacture of the 16-ft. long sections of the special pipe required.

William T. Brownson, Lamar Pipe and Tile Div., was elected president of the Concrete Pipe Association of Michigan at the organization's annual meeting. Other officers named are Philip Valle, vice-president, and C. F. Meanwell, treasurer (re-elected). H. M. Hultquist continues as managing director-engineer.

Here's why you can

HAUL BIGGER LEGAL PAYLOADS



BLAW-KNOX *Hi-Boy* TRUKMIXERS mount on short wheelbase trucks

Only Short Wheelbase *MANEUVERABILITY* gets into tight spots quickly

Mounting the motor at the rear and the transmission at the end of the combination pedestal water tank, permits center of weight to be moved 20″ forward so the front axle carries maximum legal load and allows use of shorter wheelbase conventional cab type trucks. These exclusive design features allow you to haul extra payload every trip and make more trips per day with Blaw-Knox Hi-Boy TRUKMIXERS. With Hi-Boys mounted on shorter wheelbase, more maneuverable trucks, you get loads through traffic, onto the job site and up to the forms *faster.*

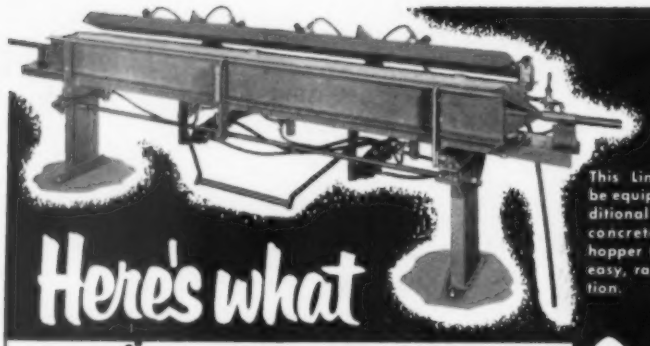
Dozens of other practical, profitable features that assure best weight distribution and most efficient loading, mixing and delivery, have been incorporated in 4½, 5½ and 6½ cu. yd. Hi-Boys. Have your nearest Blaw-Knox distributor explain them to you today.

BLAW-KNOX

BLAW-KNOX COMPANY

CONSTRUCTION EQUIPMENT DIVISION

35 Charleston Ave., Mattoon, Illinois



This Lintelator can be equipped, at additional cost, with a concrete charging hopper to facilitate easy, rapid production.

Here's what

VIRGINIA DUNBRIK COMPANY
INCORPORATED

MANUFACTURERS OF THE LYNCHBURG BLOCK AND CONCRETE ARTS

April 3, 1956

The Kent Machine Company
Cuyahoga Falls, Ohio

Attention: Mr. Daniel Urban

Dear Sir:

Many thanks for the helpful service rendered by the Kent representative, Mr. Carl Worrell.

It might be worth something to someone to know our experience with our Kent Lintelator. Firstly during this companys twenty years in business we have been making only block, concrete-type brick and lintels. About three years ago we were forced to improve our lintel operation and came upon the Kent Lintelator.

Now after three years of continuous operation we give you our reason why you cannot get it back. One operator mixes and makes more than fifty lintels in an eight hour day on our Lintelator. These are better lintels - both true and good texture. This Kent Lintelator has practically no maintenance and our operator would never consent to reverting back to the old method of making lintels.

Needless to add, the Virginia Dunbrik Co., Inc. has found the Kent Lintelator a very good and most profitable addition giving us a stock of lintels to meet the demand.

In appreciation you may use this company as a reference and invite your prospects to visit here and see and talk with the Lintelator operator.

Very truly yours,

VIRGINIA DUNBRIK CO., INC.

A. Kendall Sydnor
Sec., Treas.

Says about their KENT LINTELATOR

BETTER LINTELS... TRUE & GOOD TEXTURE

•

PRACTICALLY NO MAINTENANCE

•

WOULD NEVER CONSENT TO REVERTING BACK TO OLD METHOD OF MAKING LINTELS

•

A VERY GOOD AND MOST PROFITABLE ADDITION TO MEET THE DEMAND FOR LINTELS

INVITE YOUR PROSPECTS TO VISIT HERE AND TALK WITH THE LINTELATOR OPERATOR

You, too, can profit by the experience of Virginia Dunbrick Company.

A glance at their statement above is convincing proof that a Kent Lintelator is a definite money producing asset in any block plant today. Some plants have several in operation every working day.

You'll doubtless find a worthwhile market for lintels through the customers you are now selling.

Act now when the opportunity is "ripe" and ask us for the complete, interesting "Lintelator" story.

The **KENT MACHINE CO.** CUYAHOGA FALLS OHIO

DIVISION OF THE LAMSON & SESSIONS CO.

CONCRETE PRODUCTS MACHINERY SINCE 1925

Canadian Distributor: Wettlaufer Equipment, Ltd., 49 Merton St., Toronto 12, Ontario

Badger Concrete Company To Open New Facilities For Production on Sept. 1

At Oshkosh, Wis., the Badger Concrete Company is building a plant which is to have 15,000 sq. ft. of floorspace, for the production of a complete line of concrete block, burial vaults, shower trays, and other specialty items, including roof slabs. A special feature of the facilities will be an Eirich concrete mixer, manufactured by the Gustave Eirich Company, Hardheim-Nordbaden, West Germany.

Production is expected to begin by September 1, since the firm has several contract obligations for this fall for slabs and Mo-Sai "sandwich" panels. One contract, largest in the history of the company, calls for panels for a 24-story building.

Another contract specifies panels of unusually large dimensions—8 by 21 ft., and 5 in. thick. Each panel used in this job weighs 8,000 lbs.

Mississippi Gravel Concern Installs Block Making Unit

An important part of a sizable expansion program currently being carried out by the Natchez Gravel Company, Natchez, Miss., is the installation of machinery for the manufacture of concrete block.

According to E. Willard, owner of the concern, both conventional and lightweight units will be produced, as well as split stone in a variety of colors.

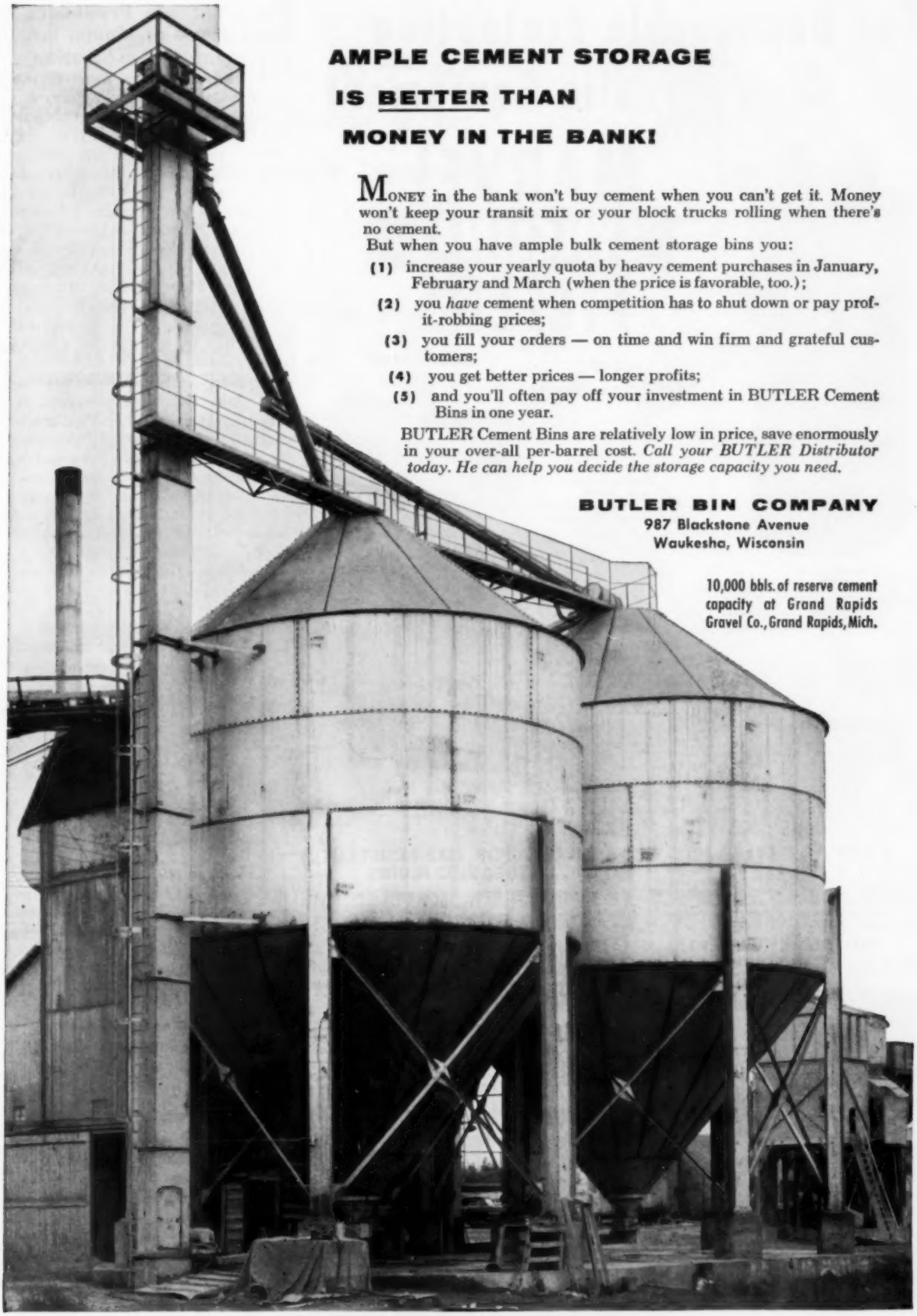
Representatives of the Natchez Gravel Company attended the organizational meeting of the Mississippi Concrete Masonry Association held recently in Jackson.

Hereford Concrete Products Building Plant at St. Louis

According to word from G. P. Hereford, president of Hereford Concrete Products, Inc., St. Louis, Mo., this firm is to have a new plant at the western edge of the city. Ground was broken on June 22 for the 60- by 200-ft. building.

Products of the 25-year-old concern are burial vaults, septic tanks, storm sewer inlets, window sills, precast steps, curbstones, and similar items.

Roy Newton McCandless, president of the Turner Gravel Company, San Antonio, Tex., died recently at the age of 61 years. Mr. McCandless was a past president and a director of the American Concrete Institute, and a member of the N.C.M.A. and N.R.M.C.A.



AMPLE CEMENT STORAGE IS BETTER THAN MONEY IN THE BANK!

MONEY in the bank won't buy cement when you can't get it. Money won't keep your transit mix or your block trucks rolling when there's no cement.

But when you have ample bulk cement storage bins you:

(1) increase your yearly quota by heavy cement purchases in January, February and March (when the price is favorable, too.);

(2) you *have* cement when competition has to shut down or pay profit-robbing prices;

(3) you fill your orders — on time and win firm and grateful customers;

(4) you get better prices — longer profits;

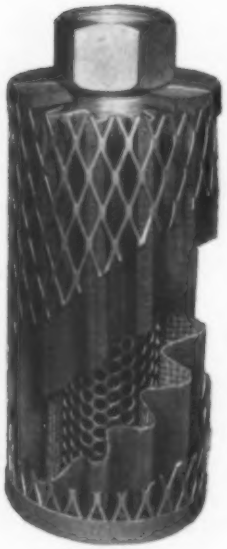
(5) and you'll often pay off your investment in BUTLER Cement Bins in one year.

BUTLER Cement Bins are relatively low in price, save enormously in your over-all per-barrel cost. *Call your BUTLER Distributor today. He can help you decide the storage capacity you need.*

BUTLER BIN COMPANY
987 Blackstone Avenue
Waukesha, Wisconsin

10,000 bbls. of reserve cement capacity at Grand Rapids Gravel Co., Grand Rapids, Mich.

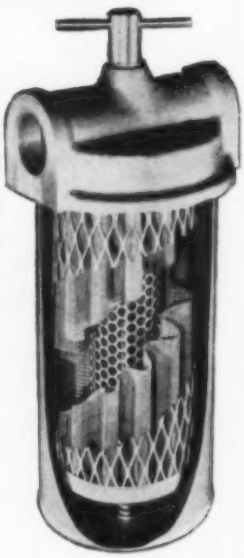
For Dependable Protection On Hydraulic Equipment



MARVEL SYNCLINAL FILTERS

Meet J.I.C. Standards

OVER 650 Original Equipment Manufacturers now install MARVEL SYNCLINAL FILTERS as Standard Equipment



SUMP TYPE (cutaway)

LINE TYPE (cutaway)

Hydraulic Oils MUST BE CLEAN to Protect Equipment— Increase Production— Reduce Maintenance

PRODUCTION ENGINEERS and MAINTENANCE MEN, whose job it is to keep production machinery operating at peak efficiency, are specifying Marvel Synclinal Filters on new equipment and standardizing with Marvels throughout their plants.

It's The ACTIVE Filtering Area That Counts!

The Synclinal design of Marvel Filter provides that all-important balance between maximum ACTIVE filtering area and sufficient storage capacity for filtered out particles. Thus, longer periods of productive operation are attained before filter cleaning is necessary. Mavel Synclinal Filters are easy to clean because both the sump and line type may be disassembled, thoroughly cleaned and reassembled in a matter of minutes. Line type operates in any position and may be serviced without disturbing pipe connections.

A SIZE FOR EVERY NEED

Available for sump or line installation in capacities from 5 to 100 G.P.M. Greater capacities may be attained by multiple installation (as described in catalog). Choice of monel mesh sizes range from coarse 30 to fine 200.

IMMEDIATE DELIVERY!

As in the past Marvel continues to offer IMMEDIATE DELIVERY.

FILTERS FOR FIRE-RESISTANT HYDRAULIC FLUIDS

Marvel's most recent development is a filter for the efficient filtration of all types of Fire-resistant hydraulic fluids.

WATER FILTERS

Both sump and line type filters have been adapted for use in all water filtering applications. No changes have been made in the basic, balanced synclinal design.

Catalogs containing complete data available on request

MARVEL ENGINEERING COMPANY
7227 N. HAMLIN AVE., CHICAGO 45, ILL.
PHONE: Juniper 8-6023

(PQ-8)

Without obligation, please send me complete data on Marvel Synclinal Filters, as follows:—

☐ Catalog No. 107—For Hydraulic Oils, Coolants and Lubricants

☐ Catalog No. 301—For WATER

Data on Filters for Fire-resistant fluids—

☐ AQUEOUS ☐ SYNTHETIC

Name .....

Company .....

Address .....

City .....

State .....

Fla. Concrete Producers Elect Jones of Maule, Ind. President of Association

At the recent convention of the Florida Concrete and Products Association Neilson Jones of Maule Industries, Fort Lauderdale, was elected president for the coming year. Other officers named include the following: Ernest S. Killgore, manager of the Pinellas Concrete Products Company, St. Petersburg, first vice-president; Frank Williamson, Winter Park, second vice-president; and Hugo Quillian, Daytona Beach, secretary-treasurer.

The new officers were introduced by William J. Hicklin Jr., Capitol Concrete Company, Jacksonville, the retiring president of the association. Addresses were presented by the following: Vincent P. Ahearn, executive secretary of the National Ready Mixed Concrete Association; William Markert, promotion director, Portland Cement Association, Chicago; Clyde L. Houck, Dun and Bradstreet; and J. J. McDonald, the Penn-Dixie Cement Company.

The convention sessions next year will be held at Fort Lauderdale.

Carolina Solite Corporation Cites Design Contest Winners

Four Clemson College architectural students have won top honors in the annual Solite competition award contest, sponsored by the Carolina Solite Corporation of Charlotte, N. C. Their combined prizes totaled $750 in cash.

The problem assigned to the students was the design of recreational facilities and a pavilion for a mountain resort.

First place winner in the competition, open to fourth year architectural students, was John A. Davenport. Second prize went to John E. Pinckney, and third place was shared by Milton White and Edgar C. Wiggins.

Mississippi Block Makers Form State Organization

At an organizational meeting of the Mississippi Concrete Masonry Association held in Jackson, Miss., on June 23 producers of concrete masonry in that state elected Sam M. Bailey, Jackson, president and E. T. Hachet, Tupelo, vice-president. Other officers will be chosen later.

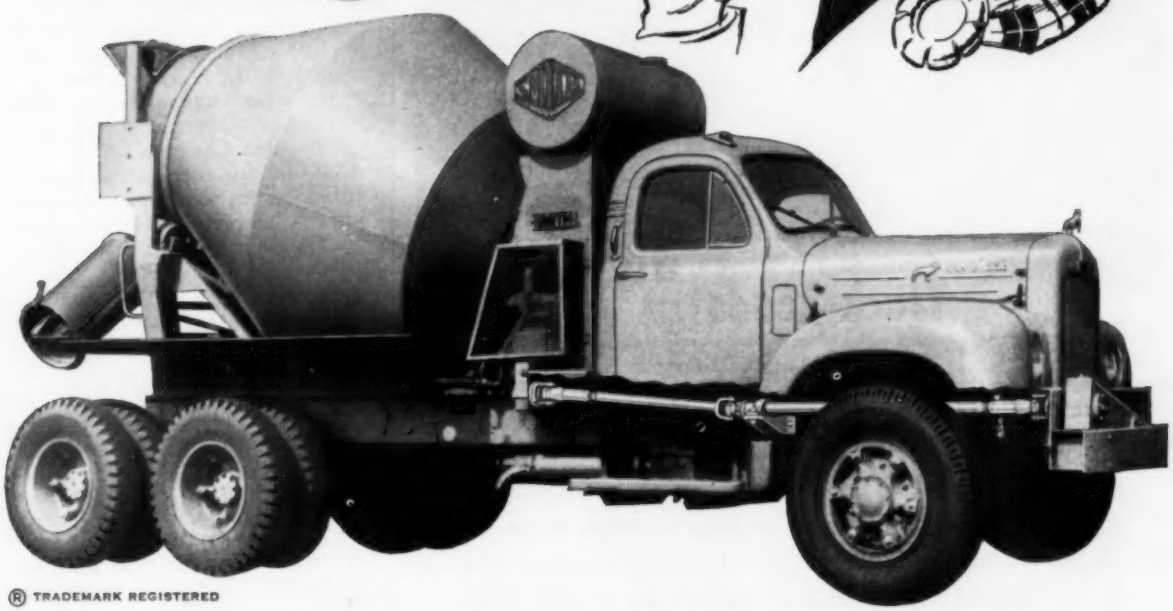
The major objective of organizing the Mississippi masonry producers is said to be to standardize high-quality concrete block.

He'll live a lot longer ... and cost you much less!

SMITH

integral®

ONE FRAME FOR BOTH TRUCK AND MIXER — ONE ENGINE FOR BOTH



® TRADEMARK REGISTERED

This is a Smith INTEGRAL with front end power takeoff — one engine and one frame for both truck *and* mixer.

The photo has been cut away to show the drive shaft arrangement on the chain drive Integral.

Engine speed is reduced at the transfer case *before* the power goes into the shafts.

This means a slower shaft speed, which cuts wear tremendously on universal joints and bearings.

result ? *Exceptionally long life, and astonishingly low maintenance cost.*

other features of the SMITH INTEGRAL

- Shorter center of gravity for better weight distribution.
- Lower height.
- Choice of integral mount, or with separate frame.
- Choice of chain or gear drive.
- Choice of sizes: 4½, 5½, and 6½ cubic yards (all with front end PTO).

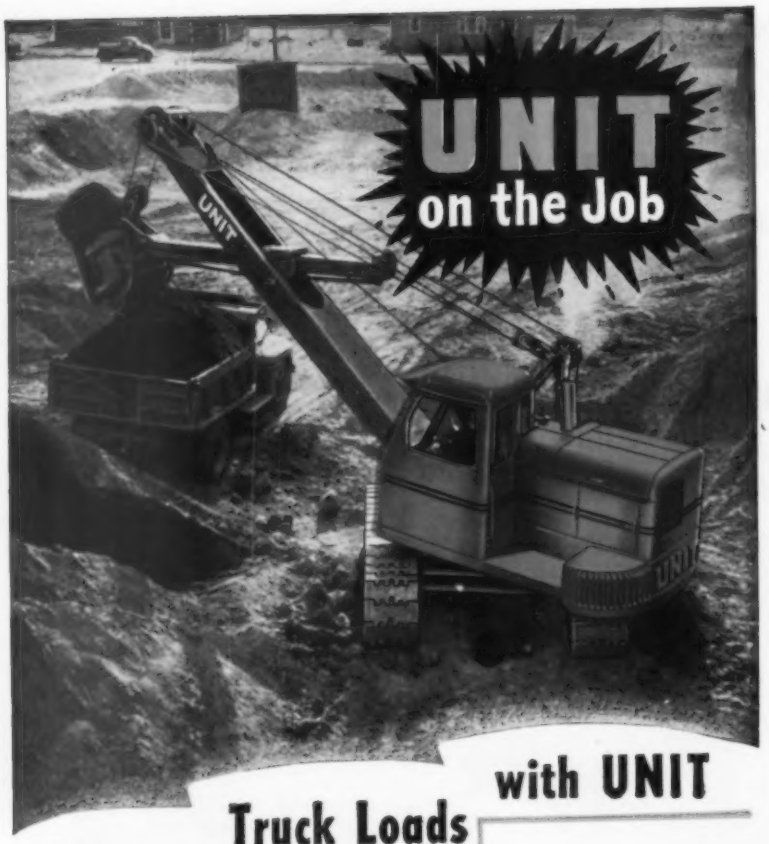
For more information, contact your nearest Smith distributor, or write to the company.

THE T. L. SMITH COMPANY, Milwaukee 45, Wisconsin; Lufkin, Texas

Since 1900, the pioneer designer and foremost manufacturer of the world's finest mixers

Affiliated with Essick Manufacturing Company, Los Angeles, Calif.

Ad No. A8856-1P



Step-up Truck Loads with UNIT

Here's a UNIT ¾ yard Shovel that's "in there swinging" . . . making big payloads. UNIT'S balanced stability and power permit hard digging . . . produce maximum yardage at low operating cost. Fewer working parts cut down replacements required . . . reduce maintenance costs. The FULL VISION CAB enables operator to see in ALL directions . . . promotes safety . . . increases efficiency. Results in more loads per day and easier load handling. Get the complete UNIT story. Write for literature.

UNIT CRANE & SHOVEL CORPORATION
6329 WEST BURNHAM STREET • MILWAUKEE 14, WISCONSIN, U. S. A.

½ or ¾ YARD EXCAVATORS...CRANES UP TO 20 TONS CAPACITY
CRAWLER OR MOBILE MODELS . . . GASOLINE OR DIESEL

All Models Convertible to ALL Attachments!

New, Expanded Plants Announced in Many Areas As Construction Booms

Newly established read-mixed concrete plants or expanded ones have been reported from various parts of the United States. Here are a few of these installations.

At San Rafael, Calif., a remodeling and construction project costing more than $200,000 will triple production at the McPhail operation, now described as "one of the largest single-stop concrete plants on the West Coast." With the new facilities added, the capacity of the plant will be raised to 240 cu. yd. of concrete per hour. McPhail also operates another automatic plant at Ignacio, Calif., which has a capacity of 150 cu. yd. per hour.

Fullerton's Ready Mix Plant at Rochester, Minn., which began operations in July, replaces a coal yard at the same location. Eugene Nixa is manager of the concrete plant.

Carrollton Concrete Mix, newest ready-mix operation in the Saginaw (Mich.) area, went into production in June. This installation, a one-man pushbutton type, has a 1,200-bbl. cement silo, two elevated bins, a control room, a 220-ft. conveyor system, and other related equipment. The company is owned by Fred P. Langschwager and his sons, Fred and John. The firm also owns the Saginaw Core Sand Company, which is adjacent to the concrete plant.

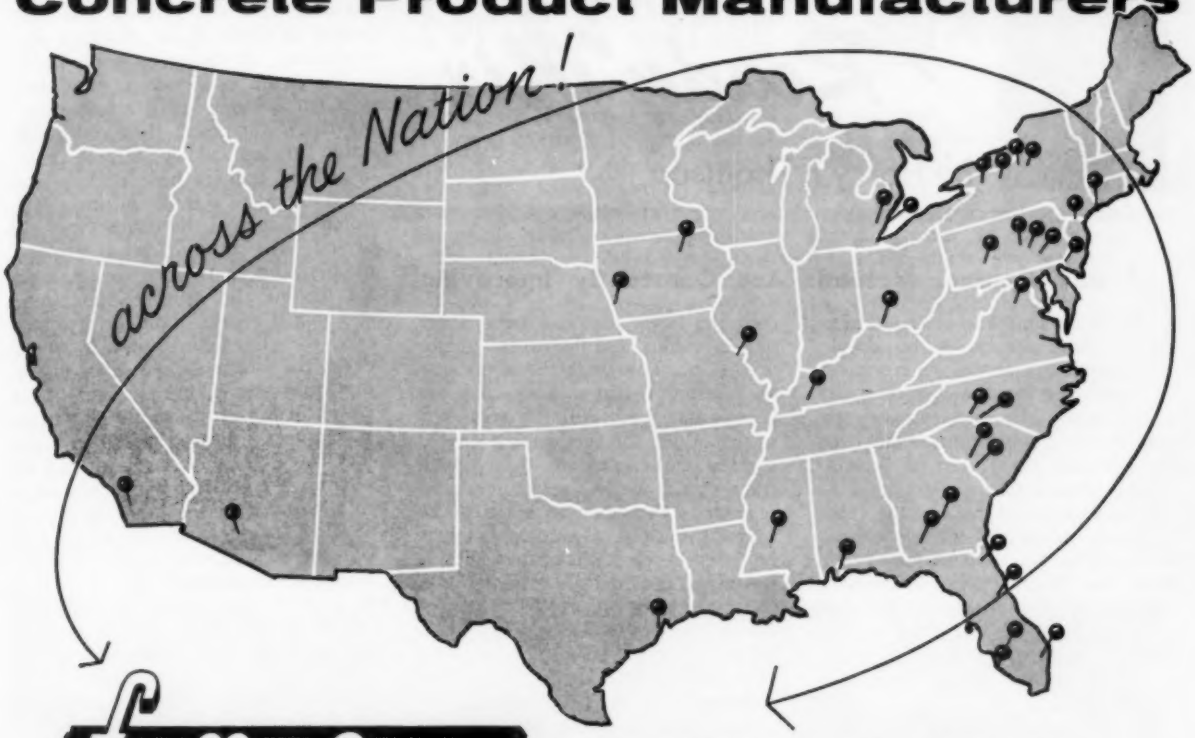
The Chester Concrete Company is presently setting up a batching plant at Red Bud, Ill. These facilities are expected to be in operation by September. The Red Bud plant will be the firm's third, other installations being located in Sparta and Chester, Ill.

Excavation and other preliminary work has been done at the site of the Macon (Mo.) Ready Mix Company's new plant. Clifford F. Vantine, manager, announced that products of the company will be ready-mix, concrete block, colored brick, and patio block.

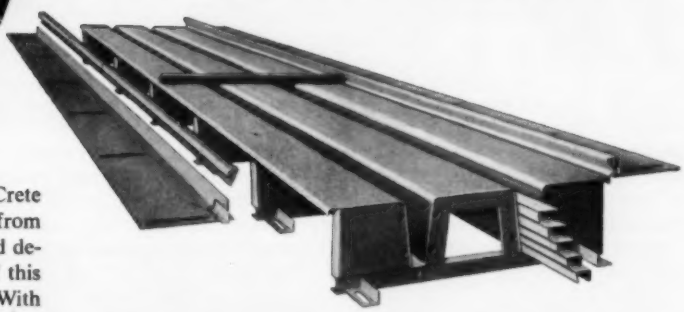
Another combination lumber-and-concrete experiment has been launched at Bemidji, Minn., where a ready-mix plant will be added to the buildings and equipment of the Standard Lumber Company. Machinery has been ordered, but construction was slowed by the recent steel strike.

Arthur F. Goss, who was manager of the Pryor Concrete Company, Pryor, Fla., died in a hospital in that city on July 5 after a heart attack.

The choice of Prestressed Concrete Product Manufacturers



FORM-CRETE® STEEL FORMS



The immediate acceptance and purchase of Form-Crete Steel Forms by prestressed concrete manufacturers from coast to coast provides ample assurance of the sound design, practical rugged construction and economy of this new innovation in the prestressed concrete field. With the addition of a line of I-beam forms engineered for casting all standard specified sizes of prestressed concrete I-beams we offer the most complete line of coordinated interchangeable forms and accessories obtainable anywhere. A new revised catalog is available soon—write for your copy today.

FORM-CRETE DOUBLE-T ALL-STEEL CASTING FORMS—*By utilizing a variety of gout forms and stem heights an ingenious manufacturer can easily surpass the 37 individual prestressed concrete castings that we conservatively estimate may be produced from this one all-steel form assembly.*

SEND FOR **FORM-CRETE BULLETIN 100-A**

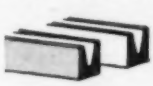
PF-5

FOOD MACHINERY
AND CHEMICAL CORPORATION
FLORIDA DIVISION
LAKELAND, FLORIDA

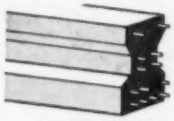
FORM-CRETE STEEL FORMS FOR CASTING REINFORCED OR PRESTRESSED CONCRETE

DOUBLE "T" SLABS

SINGLE "T" JOISTS


HOLLOW AND SOLID LINTELS

SQUARE AND OCTAGONAL PILING


BRIDGE BEAMS

PAN TYPE BRIDGE DECKS

R/x Ready Mix

By Harry F. Thomson

Test and Control Methods Are Constantly Improving

LAWN mowing and concrete mixing both appear to be simple operations. But there are contrasts. The ordinary hand-mower of today is practically the same as the one used by our grandfathers, except for the addition of a strip of pseudo-rubber around the wheels; most of the castings could have come from the same molds. The blade cannot be raised higher than about 1½ in. from the ground, whereas modern gardening books recommend that grass be 2 to 2½ in. long during warm weather. The design of hand-mowers appears to have been at a standstill.

In contrast, the concrete industry over the years has witnessed steady improvements in stationary and transit mixers, in delivery trucks, and in accessories, including testing and control equipment. For instance, during approximately 15 years the industry has moved from the 1- to 1½-cu. yd. horizontal-axis batch loader to the current 8- to 10-cu. yd. inclined-axis, open-rear-end mixer and agitater unit. The size of units is now limited by highway weight regulations. And improved test and control methods have kept pace with the increase in the size of drums.

The complex problems of measurement of workability have received special attention in recent years. The slump test as an indicator of workability has never been entirely satisfactory. Various other methods of testing samples, some simple and some complicated, have been proposed, tried, and dropped. But a simple method, now known as the Ball-Penetration Test, was suggested a few years ago by Professor J. W. Kelly, University of California, Berkeley. It has met with growing usage, especially on the Pacific Coast.

The working unit of the apparatus is a cylinder with a hemispherically shaped bottom, which with a vertical shaft and handle weighs 30 lb. The cylindrical weight is 6 in. in diameter, the lower end is a hemisphere of 3-in. radius, and the overall height is 4⅝ in. The shaft slides through an inverted U-frame, whose feet are 9 in. apart, each with an area of 9 sq. in. With the feet resting on the surface of the concrete to be tested, the distance which the rounded end penetrates the concrete is the measurement desired. The concrete may be tested in the forms or in a suitable container, provided that the depth of the concrete is at least 8 in. and the distance from the center of the vertical handle to the edge of the concrete is at least 9 in. For normal structural concrete the penetration of the ball is usually about one-half the slump as conventionally measured. The ball penetration test is covered by A.S.T.M. Designation C360-55T, which was approved recently as a tentative standard.

A new method of determining the quantity of cement in a sample of fresh concrete has been proposed by W. G. Hine and R. A. Willis, both connected with the Portland Cement Association. As cement control is one of the basic indices of quality concrete, an accurate and rapid procedure for determining the cement content of plastic concrete would appear to be very useful. The Dunagon method, which is currently used for this purpose, assumes that all material passing a No. 100 sieve is cement; it requires considerable time and involves other uncertainties as dependent on the technician's judgment. The proposed new method involves drying the portion of a sample of wet concrete passing a No. 30 sieve, and then centrifuging this material when suspended in a heavy-media liquid (suggested sp. gr. of 2.80); the cement, being heavier than the aggregate, is thrown to the end of the centrifuge cups, and can be measured. This method, together with variations suggested by others, is still in an experimental stage, but it has shown promise of being an important improvement and is being studied by a sub-committee of the A.S.T.M. Committee on Cement and Aggregates.

Lately renewed interest has appeared in methods for checking the workability of concrete while it is in the drum of either a stationary or a truck mixer—or if not measuring the slump itself, then observing some function which can be calibrated by tests to give a close approximation of slump. As most stationary mixers of the tilting type are driven by constant-speed electric motors, and as the torque required for turning the drum containing a stiff mix is greater than for a sloppy mix, the change in power input to drive the drum loaded with either mix over the input to drive the empty drum, can be calibrated as an indication of the workability of each batch. The change in power can be measured by inserting an ammeter in one of the feed lines to the motor. If the size and other features of two batches are the same except for different water contents, then the comparison of the ammeter readings when each batch is ready to be discharged may be considered a measure of the difference in slump of the two batches. Or conversely, if the ammeter readings differ for two presumably identical batches, it is probable that there is a difference in workability between the batches.

With a fixed-axis stationary mixer, the power input to the motor does not vary greatly with a change in slump because the buckets in the drum act to raise the mass and then spill it as the drum revolves. But if a hinged blade is inserted in the stream of falling material, the pressure on the blade is greater for a stiff mix than for a sloppy one. If the pressure tending to cause the blade to turn is picked up by a hydraulic plunger such as used in automobile brakes and transmitted to a pressure gauge, the change in gauge reading for two batches which are identical, except for water content, can be interpreted into slump by calibration. So-called "slump meters" of this type have been used in central-mix plants for many years.

As to truck-mixers, the industry has searched for a long time for a function, which, with simple equipment, can be used as an indicator of the workability of a batch. Recently it has been pointed out that the manifold pressure in a gasoline engine varies with the torque exerted by the engine. Thus, with a truck-mixer having a separate engine drive,

(*Continued on page* 186)

Outsize Boiler Unit Used

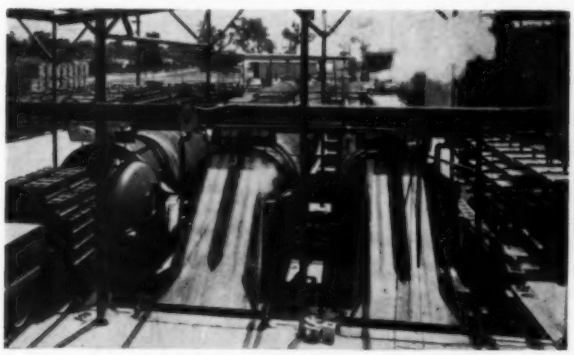
For H-P Curing at Norfolk Plant

A 600-hp. boiler is the basic unit of the high-pressure-steam curing equipment at the block plant of the Southern Block and Pipe Corporation, Norfolk, Va. Probably one of the newest and most modern plants in the Southwest, it autoclaves about 60 percent of its production of over 20,000 8-in. equivalent units daily in three high-pressure cylinders which are 7 ft. in diameter by 128 ft. in length.

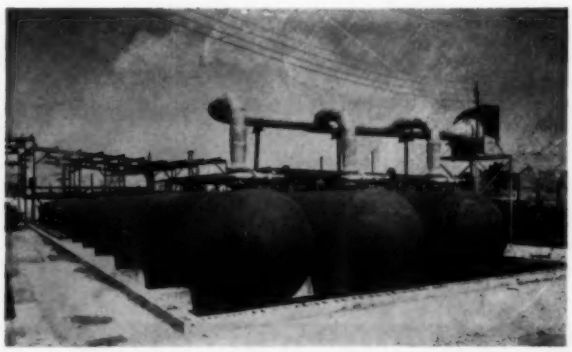
In this two-cycle-per-day operation, 2,400 units are cured in each cylinder per cycle, the remainder of of the production being cured normally in low-pressure kilns. The entire curing operation is automatically controlled, with the exception of loading and unloading the cylinders. This type of curing utilizes a control panel in the boiler house, a pressure and temperature recorder, and a time clock equipped with electro-pneumatic relays connected with the steam, door, and blow-down controls.

Loading of the autoclaves is by Yale fork lift trucks across steel-framed platforms installed at the front ends of the cylinders. When the door is open, one end of the platform is raised by electric hoist to above the top of the cylinders, the lower end of the pltaform being hinged to the concrete runway floor of the plant. The three autoclaves are set on concrete foundations below the level of the yard and will be enclosed by concrete block walls laid around the perimeter of the foundation.

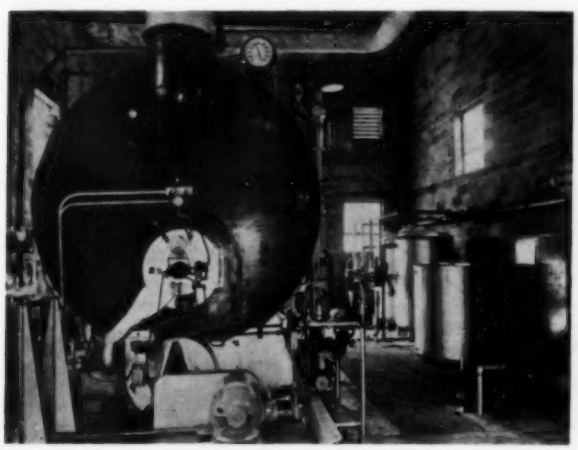
Loading time of the autoclaves averages from 45 to 70 minutes. Then the doors are sealed, steam is admitted to the cylinder, and the pressure is gradually built up from atmospheric to 140 p.s.i. in about two hours. The rise of the pressure and relative temperature inside the cylinder is recorded on circular charts. The pressure is held at 140 p.s.i. for a period of five hours. At the end of this period the time clock, through an electric-pneumatic relay, closes the automatic steam supply down valve. The latter is so regu-



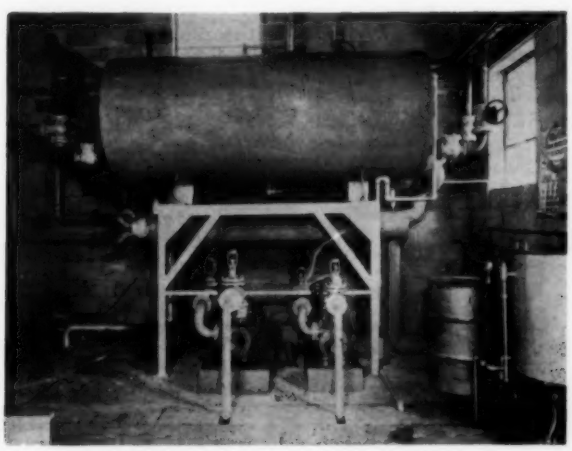
Front ends of autoclaves at the Norfolk plant of the Southern Block and Pipe Corporation, showing loading of a cylinder. The loading platforms can be raised by electric hoist to open the doors.



Read end of the three autoclaves, showing the pit installation and the steam blow-down exhaust system and muffler, which reduces the noise of the high-pressure steam to a lower level.



Interior of the boiler house, showing the 600-hp. boiler. The pressure recorder and cycle controller are mounted on the wall at the left side and at the right are the tanks and piping for water treatment and additives.



View in the boiler house, showing the duplex pump system, the feed water pre-heat tank, and the hot condensate. The feed water heat exchanger is below the tank. All controls of the curing operation are centered in this room.

lated that blow-down takes about 35 minutes. When atmospheric pressure is reached inside the cylinder, the doors are opened, and an exhaust fan on the top of each cylinder pulls out the steam-laden hot air from within for about 50 to 10 minutes before unloading comences. Unloading takes about 25 minutes, and then loading for the next cycle starts.

Under this cycle of operation about five cylinders of blocks are cured each 16 hours, producing about 12,000 8-in. equivalents daily, which are ready for immediate delivery to jobs. If they are not routed for delivery, the units are cubed and placed into covered stockpiles.

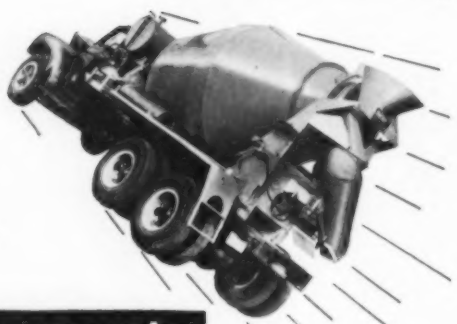
The 600-hp. boiler, furnished by Cleaver-Brooks Company, burns No. 6 fuel oil at an average rate of from 1,250 to 1,500 gallons per 16-hour day, depending upon the work load. The boiler is in operation continuously at 140 p.s.i. for at least 16 hours daily, and operates at a stack temperature of around 400 deg. F. It also provides steam for heating the plant, cleaning equipment, etc. If it can be assumed that about 75 percent of its capacity is used for curing blocks, and if fuel cost about 13 cents per gallon, the cost of high-pressure-steam curing is about 1¼ cents per unit.

The engineer makes daily checks on feed water, oil consumed, water evaporated, and condition of all equipment. Due to the efficient operation and care, this plant is maintaining an average fuel-to-steam efficiency of 80 percent, or better, by actual check.

No — the New ROCKET will NOT fly to the moon

25th Anniversary

That's right.
And for the sake of honesty in advertising, there are other things the Rocket will not do. It will not operate satisfactorily under water; it will not quadruple your profits within 24 hours; the Rocket's rate of charge will not exceed the speed of sound. The new Rocket will **not** compete in the 1957 Olympics as a member of the interplanatory space squadron.



But it WILL mix concrete

It will mix it quickly and properly under the most adverse conditions. It will also agitate quite successfully.

Owners (of Rockets) tell us this mixer (1) requires surprisingly little maintenance, (2) has every ease-of-operation feature (at no extra cost).

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Hydraulic Chute Control is fully automatic. Controls grouped for easy access.

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Electric Revolution Counter kit included, you can handle most specifications with the Rocket!

Special Alloy, abrasion resisting steel used at all wear points.

Unobstructed Hopper, for rapid charging, no spilling or waste.

Positive Chain Drive, flexible power, not affected by truck twist, road shock.

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Oregon Producer Now Making Hollow, Insulated Panels

Claiming that his product is the only hollow-core, insulation-filled cast stone panel made, Ike Whitely, of Redmond, Ore., has started manufacturing such panels in a new plant built at Deschutes Junction, Ore. Using a specially graded pumice aggregate and cement, Mr. Whitely casts and vibrates the mixture in slab form 6 in. thick and 42 in. wide, and in varying lengths, the standard length being 7 ft. 9 in. A hollow core is formed in each slab, which is later filled with loose vermiculite insulation by a special process, and the slabs are reinforced vertically with ⅜-in. steel rods.

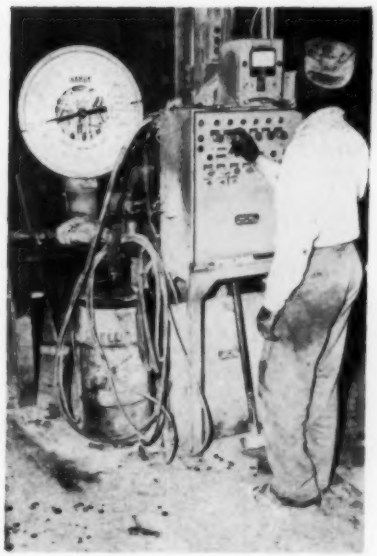
Constructed in this manner the slabs are exceptionally light in weight, the standard slab weighing only 16 lb. After casting, the slabs are cured for three weeks, the insulation is inserted, and the exterior of the slab is sprayed with a zonotone plastic by means of which process the surface is annealed into a permanent, waterproof skin. The surface plastic can be furnished in any one of 20 colors, or left unfinished for later spraying by the purchaser.

In constructing the walls of a building with the slabs, they are usually set vertically on the foundation, and bolted together at top and bottom, after which the joints are sealed with mastic.

The new company is to be known as the Hy-Bloc Manufacturing Company. Sales on the West Coast will be handled by a separate company, Hy-Block Sales Company, Portland, Ore., and sales in the vicinity of the plant by the Pamelia Lumber Company, of Bend, Ore. Designed production at the plant is 100 panels daily, to sell at from $7 to $9 per panel, each providing 27 sq. ft. of wall.

Hawkeye Concrete Products Company, Morning Sun, Ia., announces the purchase of 5½ acres of land for the erection of a plant at Mediapolis, Ia., to manufacture concrete drain tile and large-diameter culvert pipe. H. H. Schmidgall, owner, stated that concrete block production may also be included.

The Jacksonville Concrete Company's new concrete block plant. Curing rooms are at the left and the cubing shed at the right.



The cement batching scale and automatic batching and mixing control panel.

Blocks and Ready-Mix

Jacksonville Concrete anticipates continued growth in booming area

By WALTER E. TRAUFFER

Another ON THE SPOT Report

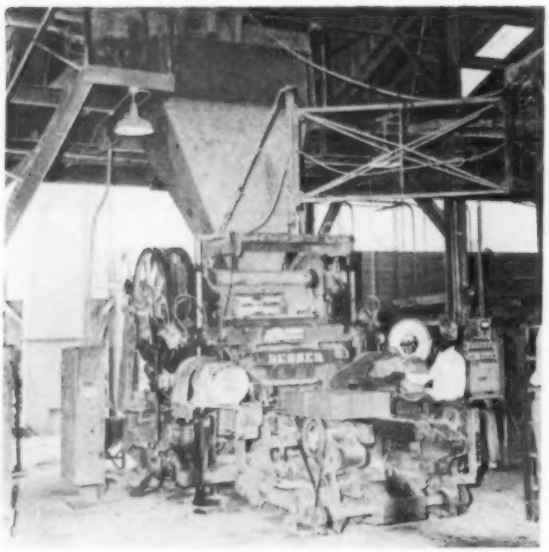
A YOUNG but rapidly-growing company in the concrete block and ready-mixed concrete business is the Jacksonville Concrete Company of Jacksonville, Fla. The Ingram Concrete Company, a pioneer ready-mix firm was taken over in September, 1952, by the present management. Operations were carried on under that name until January, 1955, when the present name was adopted.

In 1952 operations consisted of only the original Hogan Street ready-mix plant. In August, 1953, a plant was built at Edgewood Ave. in west Jacksonville, a commercial and heavy industry area. In March, 1955, when the new main plant and yard at Marshall and Talleyrand Streets was completed, the original Hogan Street ready-mix plant was moved to Heckshire Drive. This is in north Jacksonville, a predominantly industrial area.

The Marshall and Talleyrand location, in east Jacksonville, serves the downtown area as well as the south side, which is both industrial and residential. This new ready-mix operation went into operation on March 15, 1955, and a concrete block plant on the same property was put into operation in May, 1955. These three ready-mix plants are strategically located to serve all of Jacksonville and the surrounding area economically, but a fourth plant is contemplated for the rapidly growing south side residential area of the city.

All materials for the new main plant are received by rail *via* two 600-ft. sidetracks. These materials include the following: sand from Interlochen, Fla., 60 miles away; gravel from Montgomery, Ala., 425 miles away; crushed stone for block manufacture from Brooksville, Fla., 180 miles away; Solite expanded-shale aggregate from Richmond, Va., 600 miles away; cinders from Birmingham, Ala.; and cement. The aggregates are discharged from cars into a track hopper and carried away on a 24-in. by 175-ft. belt conveyor. This in turn discharges on a reversible 24-in. shuttle belt conveyor 95 ft. long, which is moved back and forth to discharge these five materials into their respective stockpiles over the 200-ft. long reclaiming tunnel. There is about one day's supply of each material in live storage in these piles.

Materials are reclaimed one at a time through 12 air-operated gates in the tunnel. A 24-in. by 200-ft. belt conveyor carries these materials out of the tunnel for feed to the ready-mix and concrete block plants. Continental Gin Co. conveyors are used throughout.



Above, left: The 900-block-per-hour machine, with the batcher and mixer above. The scale and control board are at the right.

Above, right: Two cubes being built up under the covered cubing shed.

One of the three flatbed trailer trucks equipped with a special cube unloader. Note the lift truck loading at the right.

Concrete Block Operations Materials for the concrete block are fed by the tunnel conveyor onto a 24-in. by 205-ft. inclined belt conveyor. This unit discharges at the top of the plant through a revolving spout into three 60-ton bin compartments — one for ⅜-in. crushed stone and two for sand. When cinder or expanded-shale lightweight blocks are to be made, one of the bin compartments is emptied. Usually these units are made for several days a month in order to build up a reserve supply and reduce the time loss of changing over more often.

Cement for the block operations is also received in bulk on a siding. A Cleveland 1½-in. air vibrator is attached to the bottom of each car to insure complete and efficient unloading. A screw conveyor and bucket elevator feed the cement into a 200-bbl. compartment of the bin. The elevator can also discharge *via* a split chute into a 400-bbl. reserve storage tank from which a screw conveyor feeds back to the elevator.

The materials are batched from these bins into a traveling weigh batcher to the spiral mixer on the floor above the block machine, but

Solid blocks can be split into desired sizes by this machine, designed by George Buquo, block plant superintendent.

The ready-mix plant, with the 1,000-bbl. reserve storage tank and the 1,000-bbl. cement batching bin (left).

The water meter and the aggregate batching scale, with hydraulic controls (left), and the cement scale and admix dispensers (right).

the entire operation is controlled from a Hardy Scale Company automatic control panel on the ground floor alongside the machine. This makes it possible for the batcher man to do other things such as cleanup, etc. The 10,000-lb. Hardy dial scale for aggregates is beside the panel. The beam scale for cement is on the batching floor as it is seldom changed.

From this point the operator controls the discharge of aggregates and cement into the batcher. When the 75-cu. ft. Gocorp mixer is empty, a light goes on, and a pushbutton controls the discharge of the batch into the mixer. A P&H (Darden) moisture indicator on the control panel makes possible accurate control of mixing water. Also on the panel are the controls for a Protex dispenser, and pushbuttons for starting and stopping the mixer and for moving the batcher back and forth to the hoppers and the mixer.

The Besser Super Vibrapac block machine is complete with a magnetic offbearer and a front pallet feeder. This is the latest 900-block-per-hour machine. It consistently makes 8,500 standard 8- by 8- by 16-in. blocks in 10 hr. The blocks are loaded on 108-block steel racks and conveyed by a Clark 7,000-lb. Hydratork drive fork-lift truck to the kilns. After they are cured, the same truck takes them to the cubing shed; it also returns the empty racks to the machine.

There are five curing rooms each 20 ft. wide by 38 ft. long and 10 ft. high, and holding 2,160 standard blocks. The concrete floor was poured with 8-in. curbs which protect the walls. The walls and roof are concrete block panels, the blocks being filled with vermiculite. Walls and ceilings have 1-in. vermiculite plastering. Two coats of Koppers coating were applied to waterproof the interiors. Moore Dry Kiln Company doors are used.

Steam for curing is provided by a Littleford 65-hp. Kwik-Steam generator which generates steam in 2 minutes. The kilns are modulated, and each has a 1-in. pipe near the bottom on one side. This blows the steam down one wall, creating a rolling action within the kiln. The temperature rise is controlled by Taylor automatic heat control valves, and the boiler is controlled by a time clock which automatically cuts the boiler off at the end of the last kiln cycle to be steamed.

In the curing cycle, after a kiln is loaded, there is first a 1-hr. presetting period. Then the steam is turned into the kiln for 4 hr., reaching a temperature of 170 deg. F. within 2 hr. Next there is a 2-hr. holding period. The doors are left closed until the blocks are removed the next day.

At the covered cubing area there are four Gocorp turntables for the racks. Two Gocorp air clamps on swinging booms are used to do the cubing, each feeding to two cubes alternately, so that another man can keep the blocks lined up accurately. A second Clark 7,000-lb. capacity Hydrotork drive fork lift is used to carry the cubes to the yard and to load them onto trucks for delivery. Almost unlimited yard storage space is available, and this area is being paved with concrete as more space is needed. Deliveries are made with three International trucks with 8- by 20-ft. flatbed trailers. Each is equipped with a Superlite unloader and hauls 750 standard blocks per trip.

The 8- by 8- by 16-in. 3-hole block is standard in this area, but the company also makes all specials, including colors, in solid and split blocks. The 4-in. high block for ashlar is becoming very popular for home exteriors. Colored and solid units for storefronts, decorations of homes, etc., which the company recently started to make, are going over well. These are made in 1⅝- and 3⅝- by 8- by 16-in. sizes in pastel colors and they are split into 1⅝- by 4- by 16-in. and 3⅝- by 4- by 16 in. units which are used in ash-

lar patterns of colors. Andyco colors are used in red, green, blue, yellow, and charcoal black.

Splitting is done with a machine designed by George Buquo, block plant superintendent, who has already sold 20 of them to other producers. This machine, called the "Blockbuster", can be adjusted for any size of block up to and including 12 in. The table can be adjusted for height and angle. A slide makes quick adjustment possible for ½ or ¾ size in either direction. A Robert D. Evans "Target" masonry saw is also used.

The standard mix used almost exclusively in this plant is 7 bags (658 lb.) of cement, 2,300 lb. of ⅜-in. stone, and 5,000 lb. of sand. Two ounces of Protex is used per bag of cement, and mixing time is 11 minutes. The yield is 29 standard 8-in. blocks per bag, and strengths average 750 lb. after 3 days and 1,300 lb. after 28 days.

Ready-Mix Operations Materials for the ready-mix plant are discharged from the tunnel conveyor onto a 24-in. by 235 ft. inclined belt conveyor to the top of the plant. There they are discharged through a revolving spout, cable-controlled from the ground, into the four compartments of the 400-ton C. S. Johnson Octo-Bin. Two grades of sand and ¾- and 1-in. gravels are usually stored.

Cement is received in bulk cars on the siding and is carried by screw conveyor and 80-ft. bucket elevator to the 400-bbl. plant storage bin. Cement can also be discharged from this elevator into a 1,000-bbl. reserve storage tank from which a screw conveyor feeds back to the elevator. The same elevator also feeds to a 1,000-bbl. Butler cement bin which can be used for two-stop ready-mix batching and which forms additional reserve cement storage.

The main ready-mix batching operation is hydraulically controlled, having been converted from manual operation in order to speed up batching. The 6-cu. yd. Johnson batcher is fed with cement by gravity controll electrically from a Hardy automatic beam scale. A Detecto dial scale weighs the aggregates cumulatively. Water is measured by a Neptune meter from city mains. There are dispensers for Pozzolith and Darex; these are also used for calcium chloride when it is required.

The Edgewood Ave. plant in West Jacksonville is a two-top Butler setup. The Heckshire Drive plant in North Jacksonville is a one-stop C. S. Johnson plant.

When these operations were taken over in 1952, the company had 16 truck mixers; now there are 31, including three new 7-cu. yd. Challenge mixers, six new 5½-cu. yd. Worthington mixers, and 22 6-cu. yd. Chain-Belt Rex mixers.

All of the company's salesmen's and supervisors' cars and 12 of the truck mixers are equipped with radios, and applications are in for the other 19 mixer units. Motorola sets are used, purchased outright, and they are effective within 25 miles of the station at the office. According to Frank Sprinkle, general superintendent, the radio has greatly improved service to customers and has speeded up deliveries. For example, when a contractor needs a few additional yards of concrete to finish up a job, he can get it quickly without waiting for a returning truck to bring in the news. Another advantage is that at night the plant crew can be sent home as soon as the last load is delivered.

At the main yard the company maintains a complete garage and repair shop with two day mechanics and two night mechanics who service all equipment and make minor repairs.

Officers of the company are the following: Martin Stein, president; James Sadler, vice-president; Albert Stein, secretary; and H. C. Hofheimer, treasurer. Ed Zimmerlee is sales manager; Frank Sprinkle is general superintendent; and George Buquo is block plant superintendent.

Rx R. M.

(*From page* 180)

measuring on a gauge the pressure in the manifold of this engine gives an interpretation of the workability of a batch, somewhat similar to the measurement of the power for a tilting mixer as described above. This type of installation is now on the market, but experience with it has been limited.

It will be noted that in each of these three methods of arriving at an indication of workability the function measured is other than slump itself. An interpretation from a current or a pressure reading is involved as an indication of relative workability. It should be pointed out that any calibration by test must be between batches which are identical except for water content; such comparison involves all characteristics of the batches, including brand and quantity of cement, quantity and grading of each aggregate, air content, drum speed, cleanliness of drum interior, wear condition of mixer blades or buckets, rate of adding water, and time after all materials are in the drum. These conditions can hardly be met except for repeat batches of a given mix such as that going to a particular job. However, the principal utility of such "slump indicators" is the assurance to the operator that when readings are the same for successive batches for a given job, the concrete on arrival at the job will be the same, even though various other mixes for other jobs have been mixed between these loads. Uniformity of successive loads is the service the customer wants.

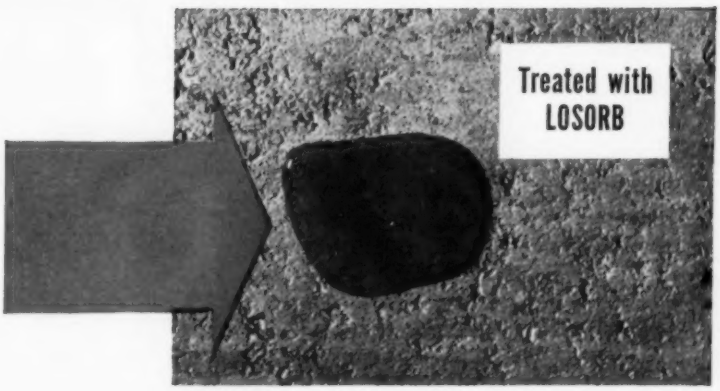
Two noteworthy gadgets in the testing field have been introduced in recent years. One, a can for field curing of concrete test cylinders, has received general approval and has the prospect of being widely used, especially in situations where it is not possible to place the cylinders in a laboratory fog room 24 hours after being made. The curing can is merely a weathertight metal can equipped with a friction lid and lined with a sponge-like material to hold moisture. The test specimen can be kept in the can, whose liner has been saturated with water, until it can reach the laboratory for standard curing until tested. Comparisons with cylinders which were standard cured throughout the period until tested, have shown in general little sacrifice of strength during seven-day curing in the can, and only a nominal sacrifice of about 6 percent during 28 days in the can. Tests of cylinders which have been cured in cans beyond the first 24 hours are not "standard", but such curing may furnish adequate information for many situations.

Another recent gadget known as the "Swiss test hammer" is used in a non-destructive test of the compressive strength of hardened concrete. The test hammer utilizes the often-used principle that the rebound of a steel hammer from a concrete surface is proportional to the strength of the concrete. This new unit comprises a hand-size cylindrical frame housing a spring-loaded hammer element, which is released by pressing against the face of the concrete being tested; the rebound of the hammer element is measured on a scale. Unless the surface of the concrete is very smooth, the area to be tested should be ground. A series of impacts are made over the area, and the readings of rebound averaged. In general, concrete cast against steel forms has been noted as giving higher readings than the same concrete

(*Continued on page* 190)

2% of LOSORB

means this



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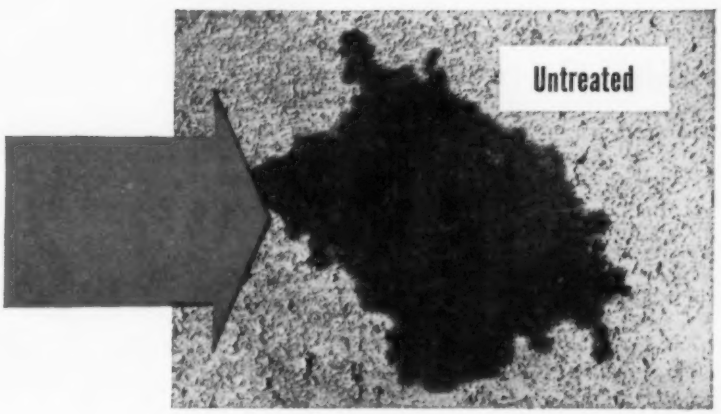

when added to

concrete mix

Moisture-proofing of concrete blocks and other products is "built-in" when LOSORB is added to the mix. The photographs above show how effectively Losorb prevents penetration of water. Both blocks are identical, except for the addition of a small percentage of Losorb in the treated block.

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Another ON THE SPOT Report

Rinker Materials Corp.

Florida producer invests over $500,000 in new plants and equipment

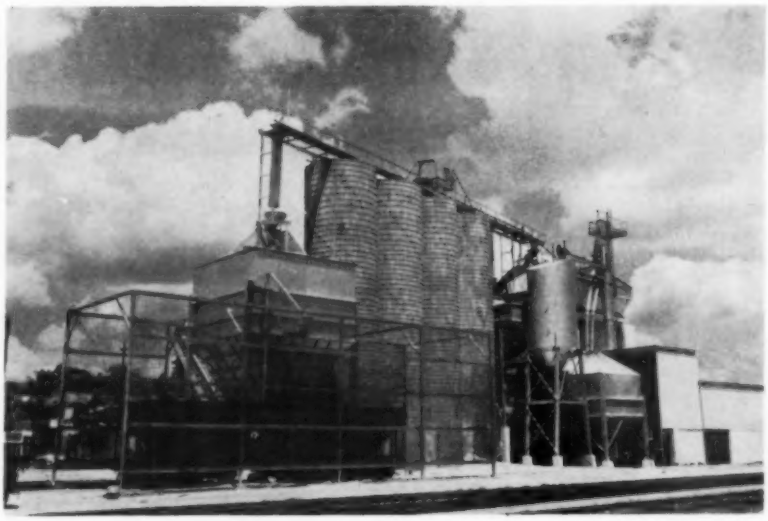
By ROY L. PECK

IF anyone should need assurance that the Florida market for concrete blocks and ready-mix concrete is healthy, he need only spend a few minutes with M. E. (Doc) Rinker at West Palm Beach to be thoroughly convinced that the future looks indeed promising. This well-known producer of concrete and building materials is betting on it to the tune of around $500,000 for new plants and equipment which will bring his eight-plant empire to a new peak of efficiency.

Doc Rinker has strung his strategically located units in an unbroken coastline of nearly 100 miles, extending from Vero Beach, 85 miles north of West Palm Beach, to the southernmost and latest plant at Boynton Beach, some 15 miles south of the West Palm Beach company headquarters.

Comprising a total of eight ready-mixed concrete plants, four concrete block plants, and two building material yards, the Rinker organization can deliver a standard block, a load of concrete, or practically any building material, *via* a comparatively short haul, to any of the multitude of construction projects being launched along this strip—probably the most costly property in this country.

In addition to the ready-mixed concrete production units at all eight locations, the company has concrete block production at Fort Pierce, Riviera Beach, West Palm Beach, and Boynton Beach, the last one now under construction. The building material yards are located at Vero Beach and Jupiter. Ready-mix locations not previously named above include plants at Stuart and Lake Worth.



New silos and bins at the ready-mix end of the Rinker Materials Corporation's plant, West Palm Beach, Fla. The fishnet enclosure over the car shaker breaks down the reverberating sound wave this equipment formerly produced.

The new plant equipment installed last year includes the following:

West Palm Beach: Four 300-cu. yd. silos; two 400-cu. yd. 4-compartment storage bins; a complete conveying belt system; three automatic electric batchers; a block machine and pallets; and the raising of all bins to fit into the new arrangement. The cost of these installations exceeded $170,000.

A general view in the yard at the ready-mix end. Note the "reverse direction" of the conveyor, necessitated by the narrow site. At the right is one of the two 4-compartment 400-cu. yd. steel bins recently installed.

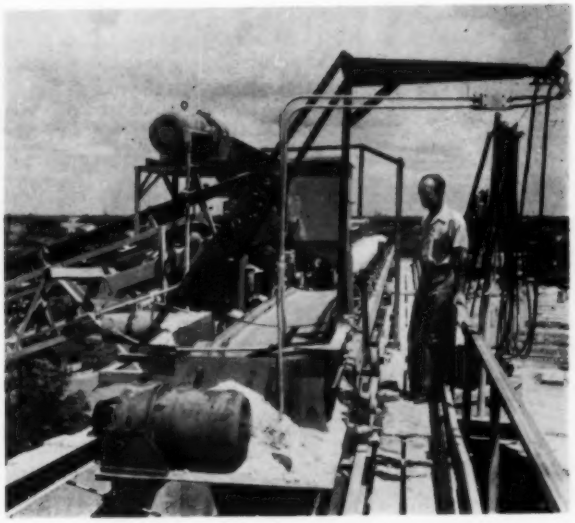
Riviera: Conveyors extended to the dock side; 6-compartment storage bin; a double-compartment cement bin; a block machine and pallets. Some $110,000 was spent for these items.

Jupiter: A complete new ready-mixed concrete plant; a warehouse and office; and four new trucking units. Total cost was over $100,000.

Stuart: Two complete plants for ready-mix and concrete block, with new bins and batchers; a 1-cu. yd. crane; a warehouse, a garage and an office. Over $75,000 was spent here.

Boynton Beach: Acquisition of 2,000 ft. of property along the Seaboard railroad line; a 60- by 135-ft. warehouse and office. Total cost, $60,000. On this site a ready-mix

A closeup of the transfer point for materials half-way up the conveyor rise.



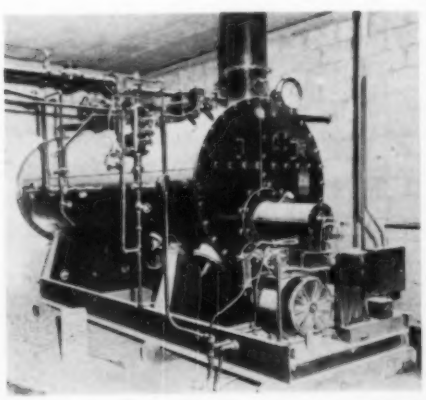
Looking along the shuttle belt which serves four silos and two bins.

The covered cubing area at block end of plant. All movement of block from this point is done by fork-lift trucks.

Below: Stockpiling of concrete blocks in the Rinker storage yard. About 1,000,000 units are kept in stock at all times.

The reclaiming blending conveyor belt operating in a tunnel under the four material storage silos.

Below: The 85-hp. oil-fired, horizontal water-tube boiler which generates steam for curing and plant uses.



and concrete block plant will be erected. The cost of this plant is in addition to the price of the land.

The accompanying photographs show some of the new equipment which has gone into the West Palm Beach plant. This setup is representative of the permanent structures being built by Mr. Rinker at plants where he has made major improvements.

All materials come into the West Palm Beach plant *via* rail, and cars pass over the undertrack hoppers to unload aggregates or cement. Because of the limited area of the plant, it was necessary to construct the conveyor belt system on a "reverse" plan to carry materials up to the top of the new storage silos. The receiving end of this conveyor passes under the track hopper.

As the plant is built inside the city limits and is surrounded by residences, stores, and some other industrial property, it was soon found necessary to eliminate as much of the noise of production as possible. One of the noisiest pieces of equipment was that of the car shaker, which vibrated the sides of the steel cars containing materials, and caused a loud reverberation. After trying out several types of sound deadening devices, it was found that when fishnets were hung around a frame above and to either side of the car the sound was broken up so that it was not too objectionable.

The main conveyor discharges onto a reversible shuttle cross conveyor installed across the tops of the four high storage silos. This conveyor permits materials to be emptied into any of the silos, or into a square 4-compartment bin for batch-loading of trucks. It can also carry materials to the bin serving the block portion of the plant, at the other end of the silos.

Materials are taken out of the storage silos by means of gates which feed by manual control onto a reclaiming blending conveyor belt running in a tunnel open at either end of the silo support structure. Practically all of the storage bins at this plant were furnished by Butler Bin Company, Waukesha, Wis. That company has also furnished six of the eight ready-mix bin and batcher setups here and in the other Rinker plants. All of these are of the semi-automatic type, with automatic weighing and manual selection of mixes of cement and aggregates.

Block cubing is done under a roofed area at the far end of the plant. The cubes of blocks are moved into yard storage by fork-lift truck units. The photograph of the yard shows that most of the area has already been used to store units three cubes high; about 1,000,000 blocks are kept in storage at all times.

Rx R. M.

(*From page* 186)

cast against wood forms. The test hammer is not claimed to be a replacement for the regular compression test, but it is a convenient tool for a quick check on the hardened concrete. A summary of various experiences in using the hammer are given in National Ready Mixed Concrete Association *Publication No. 61.*

In the field of testing there has been a notable trend on the part of producing companies toward undertaking a substantial amount of testing with their own personnel. Until recently an occasional check on slump was about the only testing done by many companies. A pressure-type air meter is now almost a "must" in a plant delivering to highway or city paving work. Also, it is almost necessary for a plant to have a mechanical vibrator for sieve tests of aggregates. And more and more companies are now equipping their plants to test cylinders and beams. Some large companies operate well-equipped laboratories. Others have set up a test truck (sometimes called a quality-control service) to make cylinders at various jobs even without request from the customer; but the test results furnish information helpful to the producer as well as the customer. Such co-operation stimulates confidence by the trade and the public authorities that the concrete delivered complies with the quality as ordered.

This trend toward more testing by operating companies has prompted several equipment manufacturers to develop small, semi-portable, hand-operated testing machines capable of breaking standard cylinders and beams made with any reasonable strength of concrete. The cost of hand-operated machines is not too great to permit consideration by a plant of moderate size. An electric motor drive can be added at nominal cost; the unit is then able to meet the A.S.T.M. requirement that the load be applied at a uniform rate of increase.

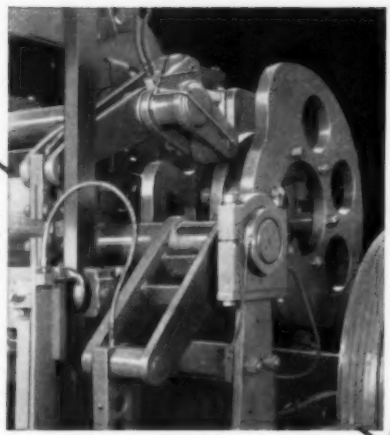
The problem of adequate curing can be met largely by the use of the curing cans with moist liners, as mentioned previously in this discussion. Of if the cylinders can be kept in a room, *e.g.* in a basement with heavy masonry walls, whose temperature does not vary greatly from the 70 to 73 deg. F. range during summer and winter, the requirement of humid atmosphere during curing can be met by covering the specimens with burlap which is kept continuously moist, until tested. Tests of cylinders cured by such methods are not "standard" and therefore should be considered as unofficial; but they may furnish indicative information which is valuable to both customer and producer. However, the one requirement which should be considered as fundamental in any testing endeavor is that the work be supervised by competent personnel. Carelessness at any point may lead to serious disastrous reactions.

The preceding discussion has been directed to reviewing recent developments in the measurement of workability and in testing equipment. But outside the plant itself the control of deliveries is of prime importance. Improvement in handling deliveries through the use of "industrial radio" appears to offer spectacular possibilities. It does not take great imagination to visualize some of the savings in truck time and the improvement in dispatching trucks which can result from having two-way radio service, with a central transmitting station and sending and receiving equipment in each truck. A representative of an important Southwest producer has been quoted as stating that that company's radio control is saving about 20 percent in mileage per yard of concrete delivered and dollarwise about $10 per truck per day.

Such radio service has been in use by some producers for as long as ten years. In recent years the number of installations has been increasing rapidly. There are problems in obtaining an operating license from the Federal Communications Commission; the problem is particularly difficult for plants in a metropolitan area having a population of more than 500,000. However, the conditions for licensing are not impossible. Private radio services are being operated satisfactorily by producers in Chicago, Los Angeles, and other large urban areas. The use of radio in the ready-mix industry was reviewed at the National Ready Mixed Concrete Association convention in Chicago last February in a paper on *Eligibility Standards for Use of Industrial Radio* by E. W. Jennes, Washington, D. C., counsel for the association. This paper, together with the ensuing panel discussion by producers using industrial radio, has been printed in pamphlet form by N.R.M.C.A.

4 Big Reasons *Why*

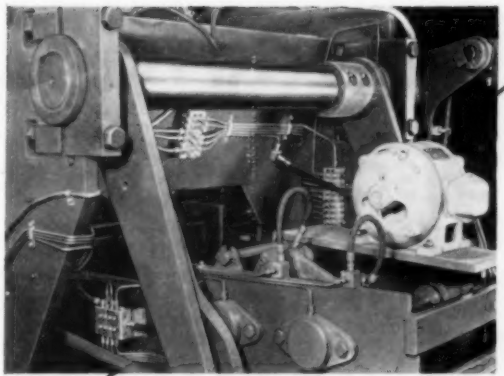
Block Makers Prefer VIBRAPACS



1

CAM OPERATED

The famous Besser cam and roller principle of power application assures dependable operation. The slow revolving cam, with a roller riding on its surface, delivers power with pin point precision and with steady, uninterrupted regularity.



2

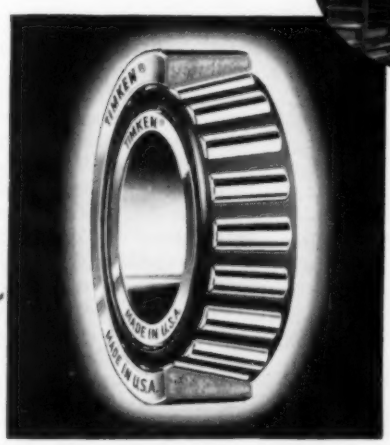
AUTOMATIC LUBRICATION

The Vibrapac now lubricates itself . . . at regular intervals . . . while it is running. No more downtime for lubrication. No premature wear of insufficiently lubricated parts. And no over lubrication.

3

ANTI-FRICTION BEARINGS

The Vibrapac is completely equipped with anti-friction bearings. Pallet receiver shaft assembly, for example, has a 7½" diameter Timken Roller Bearing. Assures smooth, trouble-free operation and a lifetime of service.



4

2000 LBS. PRESSURE

VIBRATION is under pressure of 2000 pounds. Two 10 hp. high starting torque motors give undirectional vibration under this pressure.

For more than 50 years, block makers have looked to Besser for better block machines. Today's Vibrapac produces high quality block faster and with a minimum of downtime. The four illustrations above explain why the Vibrapac excels. They spell profits for block makers everywhere. The Vibrapac gives more . . . more power, more smoothness, more ruggedness, and, what every block maker is primarily interested in, greater production. No wonder the Vibrapac is universally regarded as the world's leading concrete block machine.

Plan now for increased production of quality block. Replace antiquated, cost-consuming machines with more dependable Vibrapacs. Your nearby Besser representative will gladly give you all the facts.

BESSER Company

World's Leading Manufacturer of Concrete Block Machinery

BOX 131 — ALPENA, MICHIGAN, U.S.A.

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Ohio R. M. C. Assn. Discusses Welfare, Public Relations

FOUR objectives of the Ohio Ready mixed Concrete Assn. were enunciated at the 18th annual meeting of the group, held at the Hotel Hollenden, Cleveland, Ohio, on June 19-20. These included promotion of the welfare of the industry, attainment of skill in producing a quality product, establishment of better relations between the members and the public, and the provision of facilities for concerted action on questions of general concern to the industry.

The two-day meeting was one of the best ever held, not only from the standpoint of attendance, but from interest in the program. Nearly 200 members, associate members, and others attended the sessions. A good portion of those attending the meeting visited and inspected the new and modern ready-mixed concrete plant of the Cleveland Builders Supply Company. All talks presented were of special interest to the varied group, and subjects ranged from selection and maintenance of equipment, incentive safety programs, and ready-mix short courses, to the significantly informative reports of the officers covering the past year's activities. Vincent P. Ahearn, executive secretary, National Ready Mixed Concrete Association, Washington, D. C., gave another fine "Washington Report" which was well received.

After the showing of the association's new film, *The Case of Officer Hallibrand,* which vividly pointed out the dangers of careless driving, W. J. Corr, assistant director of service, Mack Manufacturing Company, Plainfield, N. J., spoke on *Selecting and Maintaining the Ready Mixed Concrete Vehicle.* His suggestions were especially appreciated, presenting as they did, factual and up-to-date information on the equipment which represents a large part of the capital structure of every producer. His talk evoked considerable discussion from the floor on controversial details.

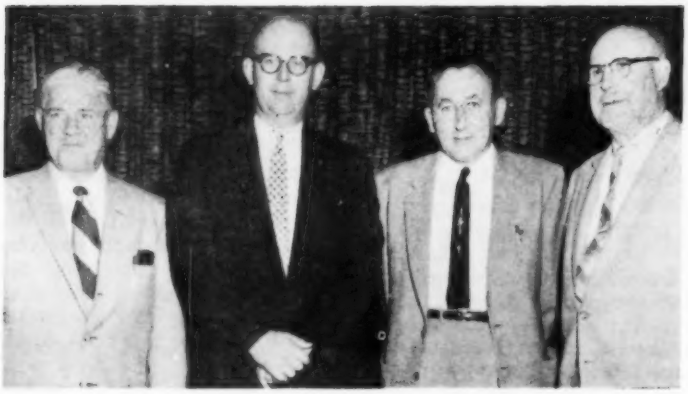
F. S. Baster, vice-president in charge of engineering, White Motor Company, Cleveland, next presented a talk on *Adapting Truck Chassis to the Ready Mixed Concrete Industry in Ohio.* In this discussion, a companion talk to the one preceding, the speaker emphasized points in the legal requirements of the Ohio state law governing truck operation which were of special significance to operators. He showed how the manufacturers of truck chassis are being compelled by competition to furnish vehicles which offer the best legal payloads to the producer, and explained that each producer should carefully study the hauling capacities of all trucks and compare these according to the legal limitations in the state.

Roger H. Slugg, Hamilton Gravel Company, Hamilton, Ohio, presented an interesting talk on incentive safety programs, saying that each program must be designed to the specific needs, interests, and resources of the producer. He enumerated the benefits of a safety program—if it is to be truly incentive—as both direct and intangible to the producer who initiates them. Under the first "dollar-and-cents savings" he would include the need to protect expensive equipment; to reduce downtime, repair bills, and claims from accidents; and to make the equipment look and operate more efficiently. The intangible benefits include building good will with customers and a friendly competitive spirit among the employees.

Ten good factors to consider in setting up a safety program, Mr. Slugg emphasized, would include positiveness; management approval; employer acceptance; employe participation; motivation; payments of awards; a program that is active, alive, and subject to review; stimulation of the competitive spirit; and co-operation with the union. The use of dashboard stickers, posters, and payroll inserts; regular meetings; a safety council; and a closer tie between drivers and mechanics were other suggested ways for achieving a successful safety program.

A talk not originally scheduled on the program, given by Gordon Lewis, Anderson Concrete Corporation, Columbus, Ohio, covered specification

Russ P. Mumford, Beckley-Meyers, Springfield; Sam Nagy, Profilm, Toledo; Charles O. Dittrich, Hilltop Building Materials, Cincinnati; W. J. Berschger, Blaw-Knox Company; R .E. Tiefel, The Dow Chemical Company.



Newly-elected officers of the Ohio Ready Mixed Concrete Association: Ralph H. Anderson (Anderson Concrete), treasurer; Roger H. Slugg (Hamilton Gravel Company), vice-president; George J. Frye (Dayton Builders Concrete Company), president; Claude L. Clark, secretary.

trends. Mr. Lewis gave the members advance notice of things to be reckoned with in the near future as regards state and municipal specifications, and urged that all producers apprise themselves of the potentialities of these trends.

In his report to the membership, Charles O. Dittrich, Hilltop Building Materials, Inc., Cincinnati, Ohio, retiring president of the association, listed the four objectives of the organization and proposed a code of ethics to go along with these objectives. He reviewed the year's activity and the work of the various association committees, asserting that this phase of the work was most beneficial to those who participate in it. He reported the addition of 22 new active members and three new associate members in the last year, which brought the present total to 144 active and 35 associate members.

The report made by Claude L. Clark, secretary of the association, was divided into the discussion of four topics—legislation, public revenues, highway revenues and program, and public relations. Mr. Clark briefly covered the legislative problems which faced the ready-mixed concrete industry in the state during the last session of the legislature, and those proposals which are due to be offered in the coming months. He also presented breakdowns by the state highway department of the revenues available, and described the provisions of the federal program for roads, indicating how this program might affect the ready-mix producer in the years during its completion.

Russ P. Mumford, Beckley & Meyers Concrete Company, Springfield, Ohio, chairman of the association's short course committee, reported on the short courses held over the last five years at various university locations in Ohio. These were mostly of two or three days' duration and each was attended by 125 to 250 registrants. Instructors and speakers at these courses were from the ready-mixed concrete industry, and cement and aggregate producers of the state, the P.C.A., the Ohio State Highway Department, and commercial firms associated with the industry. The courses consisted of prepared papers, lectures, slides, movies, laboratory demonstrations and open forums. In his talk Mr. Mumford advised that the next short course will be held at the University of Dayton, Dayton, Ohio, January 14 to 16, with headquarters at the Hotel Biltmore. Mr. Mumford concluded his discussion by reading the "Creed of a Concrete Man", an inspiring summation prepared by the Portland Cement Association many years ago, which has not been changed in import since that time.

Robert Mitchell, president of the National Ready Mixed Concrete Association, and president of Consolidated Rock Products Company, Los Angeles, Calif., addressed the group on the advantages of organized effort in combating the tactics of union bosses. He reported on the much-publicized Los Angeles strike of last winter, and related how the industry had co-operated in meeting that situation.

After the annual luncheon the following slate of officers was elected unanimously: George J. Frye, Dayton Builders Concrete Company, Dayton, president; Roger Slugg, Hamilton Gravel Company, Hamilton, vice-president; Ralph H. Anderson, Anderson Concrete Corporation, Columbus, treasurer; and Claude L. Clark, secretary.

The following were elected directors: Russ Ochsenhirt, Botsum Bros. Company, Akron (to fill out unexpired term of Roger Slugg) for a 1-year term. For a 3-year term the association elected Charles O. Dittrich, Hilltop Building Materials, Inc., Cincinnati; William A. Rogers, Basic Construction Materials, Chillicothe; and George Goetz, Clifton Concrete & Supply Company, Cleveland.

The luncheon speaker, Vincent P. Ahearn, executive secretary, National Ready Mixed Concrete Association, Washington, D. C., outlined what could be expected from the Federal Highway Bill, and discussed impending legislation, labor relations, and cement shortages. Mr. Ahearn feels that the ready-mixed concrete industry is in a critical situation in regard to sufficient cement to take care of present needs, let alone the augmented demand resulting from the initiation of the highway program.

A. G. Streblow, president of Basalt Rock Company, Inc., Napa, Calif., recently announced the appointment of Virgil L. Bottarini as assistant manager of the company's Healdsburg (Calif.) plant, and of Joseph C. Mirani as general sales manager of the aggregates division, to succeed Malcolm M. McIntyre, retired. Mr. Mirani has been associated with the company since 1934.

Ralph T. Horton recently became promotion manager of S & G Concrete Company, of Myrtle Beach and Beaufort, S. C., according to an announcement by J. E. McWatty, company president. Mr. Horton, who recently resigned the chairmanship of the New Hanover County Commission, will promote the company's ready-mix concrete in all types of structures.

The name of the Sacramento (Calif.) Pumice Brick and Tile Company has been changed to the Sacramento Lith-I-Block Company. This was done because pumice is no longer used as an aggregate in the firm's products.

Prestressed Concrete Institute Sessions Cover Design, Technical Topics

Limited space prevented full coverage of the P.C.I. convention in our July issue. We are therefore presenting herewith a report on the last sessions of the meeting.

Design In a combined session, a discussion was held on design, with the following panel members participating: W. E. Dean; Thor Germundsson; Professor Lin; Eugene Smith; and Professor Paul Zung-Teh Zia, University of Florida, Gainesville, Fla.

Considerable discussion ensued on this subject, the general concensus being that many improvements in design techniques have been developed since the earlier prestressed structures were conceived. It was felt that many of these could be built today at a considerably lower cost by using improved design. Many leading firms of architects and engineers, and some state highway departments have established design criteria which are in substantial agreement. Technical schools are including design techniques in their curricula, and many staff members are doing special research on various aspects of design.

On the subject of continuity in design of prestressed concrete structures, Eugene Smith stated he believed that many designers are not applying this construction technique as efficiently as it warrants. He declared that continuity can be achieved in such structures quite simply by providing cap cables at support points, or mild steel reinforcing, in bars extending over supports, to develop the necessary continuity.

Mr. Germundsson reviewed the work done by the California Highway Department on prestressed structures, saying that many economies had been effected in erection procedures, in reduced depth of members, in obtaining higher strength, and in mass production of bridge beams of relatively short spans. He stated that in Oregon quite a number of prestressed structural members had been erected, using spans from 120- to 150-ft., these having been bid competitively with structural steel. In addition, numerous jobs of short span, pre-tensioned beams, and post-tensioned girders of longer span, have been installed in that state.

Professor Paul Zia commented on the increasing use of beams in which multiple units of precast concrete have been used to form the member. In other remarks, he made reference to camber as the inherited characteristic of prestressed concrete, incorporated in the member to offset the deflection due to live load. He pointed out that the designer is usually most interested in two problems—the probable depth of the member and its comparative cost. Unless he is experienced in the analysis and design of a prestressed concrete beam, the structural designer faces a laborious task in selecting a proper trial section. For a preliminary design, such consumption of time cannot always be justified. The several "rules of thumb" which have been suggested do not always readily lead to the solution of the problem without some additional computation.

Technical Papers Thor Germundsson's paper, entitled *Status of A.C.I.-A.S.C.E. Joint Committee 323 Report on Recommended Practice for Prestressed Concrete,* covered a brief outline of the subjects in that report, which he as chairman of the committee estimated will not be available until around September, 1957. This is due in part to the requirements of the A.C.I. that all proposed standards must be submitted to the standards committee not later than September 1, and that the three remaining months do not allow sufficient time to accomplish the revisions which the committee deems necessary to include. He welcomes any comments on the report if submitted by August 1. Mr. Germundsson stated that the Portland Cement Association is considering fire resistance of prestressed concrete, and that contemplated tests would be very helpful in determining this factor.

Professor Ekberg delivered an extensive and highly technical discussion on *The Characteristics of Prestressed Concrete Under Repetitive Loading.* It will be discussed in a subsequent issue of the CONCRETE MANUFACTURER.

Curzon Dobell delivered a paper on *Structural and Economical Advantages of Prestressed Concrete for Large Span Bridges.* He believes that the use of short bridge spans in Florida are satisfactory, but that such spans would not ordinarily be used in other bridges requiring 100- or 150-ft. spans. Germany has been using prestressed bridges in spans up to 300 ft.; in one case, a 370-ft. span was used.

Mr. Doble's experience dates back to the 1950 design of the Walnut Lane bridge in Philadelphia. Thirteen large girders were used in this construction, but erection was very poorly planned at that time for handling these girders. Since then, instances of long-span prestressed bridges total more than 100 in this country alone.

Mr. Dobell feels that the employment of engineer specialists in the design of prestressing plants and in installation of the structural members is cheap insurance in production costs of structures. He presented considerable data on the costs of falsework of three types — timber, steel, and self-centering—and information on certain competitive bids, comparing prestressed concrete alternates with structural steel or reinforced concrete. He urged that producers investigate the 300-odd patents now existing on various phases of prestressing if they wish to use such patents in design, or to pay a reasonable fee for the use of certain patented features.

Mr. Godfrey's paper on *The Physical Properties and Methods of Testing Prestressed Concrete Steel Wire and Strand,* left no detail unexplained in this important phase of the subject. His talk included the following topics: tensile strength and elongation, additional ductility indices, yield strength, creep and relaxation, and effect of welds. He showed some 20 slides and several tables illustrating tensile, elongation, wrap, and stress-strain tests on wire and strand, and others on the equipment used in this work.

Mr. Dean presented a very interesting paper on *Comparative Costs of Prestressed Construction and Conventional Types in Trestle Spans of Florida Bridges.* Because of the valuable data included in this paper, it is planned to publish this discussion in the CONCRETE MANUFACTURER.

Professor Kluge, in his paper, *Prestressed Concrete Research at the University of Florida,* briefly described the several experimental studies in prestressed concrete now being conducted at the university and presented some of the significant results of these studies. He described the following pieces of physical equipment in the structural laboratory where the work is being done,

(*Continued on page* 212.)

Developments in Autoclave Block Curing Systems

By WILLIAM J. SHORE
Shore Engineering
New York, N. Y.

IN this talk[1] on curing concrete masonry units, I propose to discuss two general subjects of interest to the industry today. The first of these will deal with the development and improvements in high-pressure-steam curing of block over the last year or so, and the second subject will cover causative agents of corrosion which have been experienced in this type of curing, and the possible ways to eliminate such corrosion.

Under the first subject I wish to talk about the following: installation costs, quick-opening doors, gaskets, dimensions of autoclaves, vacuum rings, loading bridges, steam generating systems, insulation of cylinders, two-phase curing, fuel economies, blowdown silencers, and automation as applied to the production of block.

In discussing the subject of corrosion, I will speak on the incidence of corrosion in low- and high-pressure-steam curing, various aggregates and corrosion-creating properties of each, and slag aggregates and their reactions under high-pressure-steam curing. I will offer recommendations or suggestions for reducing corrosion of metal in this type of curing.

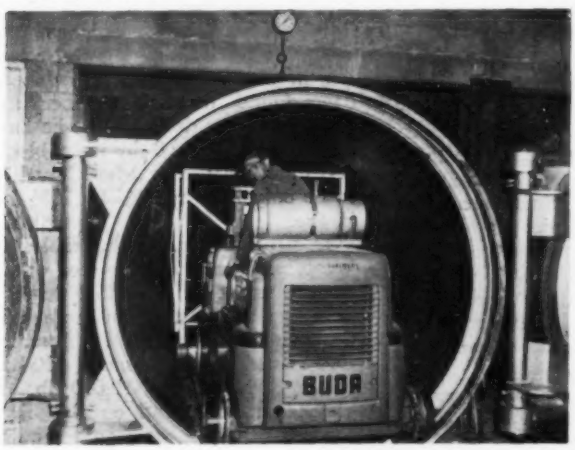
[1]Presented at the meeting of the Cinder Concrete Products Association, at Atlantic City, N. J., July 30, 1956.

Installation Costs As an example of how installation costs have increased lately, I would cite the case of the costs of two installations, built a year apart. These were identical, and consisted of two autoclaves, of 10-ft. diameter by 110-ft. length, and a 500-hp. package-type steam boiler. The installation made in 1955 cost $91,000, whereas the same setup would have cost $108,000 in 1956, or approximately 19 percent more.

Quick-Opening Doors Two general types of quick-opening doors are now being used on autoclaves. One type has a locking ring holding the door in place, which requires no strong pressure to perform this locking. In this type, tight sealing is accomplished by means of a lip-type gasket. In the other type, an outside rotating ring operates a series of wedges which hold the door tightly against the parting face of the autoclave. While the former type makes use of a lip gasket, the latter operates with either a lip or an asbestos gasket. Much greater pressure is required with an asbestos gasket, to achieve sufficient tightness and to prevent leakage of steam.

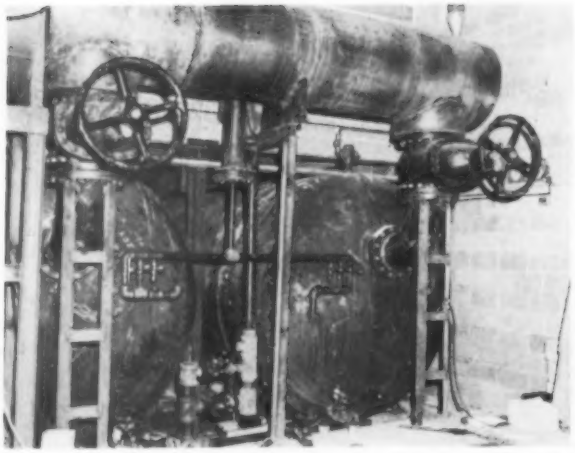
Approximate costs of these different types of doors will vary only slightly, that of the locking ring type being $1,000, of the wedge lock door with lip gaskets, $1,200, and of the same type using asbestos gaskets, $1,300—all these costs in per ft. of diameter of door.

A forklift truck about to pick up the movable bridge which provides entry into the autoclave.

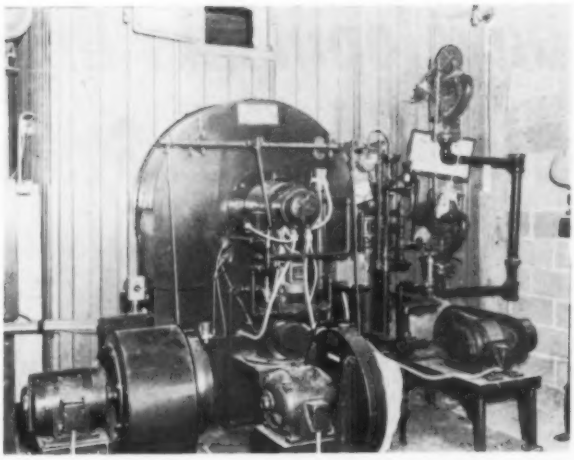


Loading end of an autoclave, showing one of the lift-trucks with a loaded rack entering the cylinder.

Life of Gaskets Based on my experience, there has been great improvement in the lip-type gasket, but not too good a record for asbestos-type gaskets. One user of lip gaskets personally known to me reported 153 complete cycles of opening and closing of doors so equipped in 3 months of operation, while another operator, using asbestos gaskets, reported no more than 33 such cycles, for slightly over 15 days of two-cycle operation. Both instances



Closed ends of two 8-ft. diameter autoclaves, showing the steam valves and headers for controlling high-pressure steam.



Fully-automatic oil-burning equipment which fires 500 hp. water-tube boiler to produce steam.

cited are of actual performance, but they do not imply that the above type of service is common to all other users of either type of gasket.

Dimensions of Autoclave Autoclaves originally employed for the manufacture of sand-lime brick usually were 6 ft. in diameter by 70 ft. in length. The earliest high-pressure-steam cured block were produced in this type of autoclave. The first departure from these dimensions was made by Noel Harter (Harter Marblecrete Stone Company, Oklahoma City) in 1950, when he installed five autoclaves, each 8 ft. in diameter by 92 ft. long.

In 1954, autoclaves that were 10 ft. in diameter by 100 ft. long were built and from that point on most of the installations were of this size. Loaded racks were brought into the cylinders on fork-lift trucks, with wheels fitted with steel tires which rolled on a set of steel rails welded at each side of the interior of the autoclave.

About two years ago two autoclaves were built without rails on the inside, but with a horizontal steel platform installed in the lower section of the cylinder. This arrangement permitted the use of regular platform lift trucks, and afforded greater freedom of operation. It made available any type of lift truck, and any type of rack of either two- or three-compartment type, five or six tiers high. Loading or unloading autoclaves so equipped proved to be a more speedy operation. Naturally, the cost of this type autoclave was substantially higher than the 8-ft. diameter size. Likewise, the steam consumption was also increased by nearly 10 percent because of the extra wasted space in the lower portion of the cylinder and becaues of the greater amount of metal which had to be heated for each cycle.

Loading Bridges Satisfactory loading bridges to be used by lift trucks can be manufactured very economically today, and moving them into and from position is a far simpler task today than it was two years ago. These bridges are approximately 8 ft. in width and 9 ft. in length, providing sufficient space in both dimensions for the operation of the lift truck.

To build such a bridge all that is required is a rectangular frame of steel channels covered with ⅜-in. or ½-in. checker plate. In handling these bridges, the forklift truck operator rests the fork on top of the plate. The fork is then clamped or otherwise connected by chain to the plate, and the entire bridge lifted and placed in position, or is removed, preparatory to closing the drum.[2]

Steam Generating Equipment Steam boilers for high-pressure curing systems are available in two types—the water-tube and the fire-tube—the latter generally of the Scotch marine design type. In the fire-tube boiler, combustion products travel through the tubes, which are immersed in the water to be heated; in the water-tube types, water travels through the tubes which are completely surrounded on the outside by the gases of combustion.

Water-tube boilers cost approximately 10 percent more than fire-tube boilers and require more skilled attention than the latter type. Fire-tube boilers, on the other hand, are simpler in their construction, are easier to operate, and have lower maintenance costs. In addition, it is not so necessary to watch the purity of the water supply when using fire-tube boilers as it is with water-tube types. Both types of boiler are good, however, and will function satisfactorily if they are of proper capacity for the individual steam requirements of the plant.

The boiler size required for any high-pressure-steam curing is determined by the hourly steam requirements of the plant. If this is 12,000 lb. of steam per hour, for example, the average block producer might refer to a boiler catalog and choose that size of boiler which indicated a delivery of that amount of steam. One boiler catalog shows that a 350-hp. boiler is guaranteed to deliver 12,075 lb. of steam per hour. Having good faith in the boiler manufacturer, the block producer might order that boiler and have it installed. When operation starts, it is found that the boiler cannot maintain steam pressure, and that its capacity is too low to perform the work. The situation is somewhat similar to the position in which some block producers have found themselves, when an angry customer declares that he had purchased an 8- by 8- by 16-in. block and upon measuring it had found it to be only 7⅝- by 7⅝- by 15⅞-in. in size.

In steam delivery rating tables, it is assumed that the boiler feed water is at a temperature of 212 deg. F. (boiling) and that steam pressure is 0 p.s.i. (atmospheric). Actually under working conditions a 350-hp. boiler delivers only 10,000 lb. of steam per hour, and on this basis for our example, we would require

[2]A good illustration of such a method is contained in Roy Peck's articel on the high-pressure-steam curing system used in the Paturzo plant, Baltimore, Md., shown on page 275 of The Concrete Manufacturer issue of May, 1956.

New Barber-Greene conveyor, erected in just 2½ days after the fire, boosts tonnage from 250 tons a *day* to 250 tons per *hour*.

Conveyor destroyed by fire on Monday
New one operating Friday

On Monday fire roared up a wooden conveyor owned and operated by a Milwaukee cement block company. Out of the devastation only the wooden "A" frames remained. Without the conveyor, production was at a standstill.

At 6:00 the following morning the owner called the local Barber-Greene distributor to see what could be done. Drawing from his own stock of standardized conveyor components—trusses, idlers, drives—the distributor was able to rush all the necessary components to the burned out plant by noon. And by Friday morning the new conveyor was erected and operating.

This fire and the quick return to normal operations point up the basic advantages of Barber-Greene *standardized* components. These advantages include: quick delivery from stocks of standardized components . . . elimination of engineering time required when building "custom-made" conveyors . . . and fast, easy erection.

Trouble-free operation is an additional benefit of the factory aligned and adjusted drives and terminals. Flexibility in shortening or lengthening your conveyor is another plus.

Write for information on Barber-Greene *Standardized* conveyor components

Barber-Greene BG

AURORA, ILLINOIS, U.S.A.

CONVEYORS . . . LOADERS . . . DITCHERS . . . ASPHALT PAVING EQUIPMENT

a 420-hp. boiler. We must therefore use a 500-hp. boiler, since the next smaller size, 400-hp., would give poor service while operating under overload all of the time.

Many blockmakers have complained that they have great trouble with package boiler units. This may be true; and if so, it is because the above considerations have not been given the thought and attention required. Generally, when ordering boilers, it is advisable to add from 20 to 25 percent capacity to the unit that is being purchased.

Licensed Boiler Personnel Many block producers who change to the use of high-pressure-steam curing, employ new forces of engineers and firemen to attend the new boiler equipment, because of the requirements of local or state regulations or ordinances. I generally recommend to clients that they arrange to have their foreman or others in their employ take examinations for engineers' licenses. Employees of block plants who have been operating low-pressure boilers are usually capable of attending to high-pressure boilers. Operation of the latter is quite similar to low-pressure boiler operation, and there is no need for employing extra personnel to handle it.

Insulation of Autoclaves When autoclaves are mounted in masonry or frame enclosures, the cost of insulating them is less than when they are set in the open and exposed to weather conditions. For ordinary purposes, a 3-in. thickness of fiber glass provides excellent insulation. If the autoclave is within an enclosure, a vinyl plastic cover over the insulation is satisfactory; when outside and otherwise unprotected, a sheet aluminum cover will be found to be advisable.

On one of my installations of two autoclaves, which were enclosed and housed in a masonry structure, no fabricated blanket insulation was used. Instead, expanded vermiculite was used to fill the space around the outside of the cylinders and for a thickness of 3 in. above the top. Little labor was needed to install this insulation, and the cost was only about 60 percent of that of standard insulation procedure. The efficiency of such installation is remarkably high. When the pressure within the autoclave reaches 140 p.s.i., steam supply is discontinued. In a period of five hours thereafter, the pressure drops only 10 lb., from 140 to 130 p.s.i. Temperature in the same period drops from 361 to 355.7 deg. F., or slightly over 1 deg. F. per hour.

This exceptional performance indicates the need for steam supply only during the build-up period. If the time required to bring up the pressure is three hours, one boiler large enough for one autoclave can then handle the load of eight autoclaves each 24-hour day. If pressure can be brought up in two hours without harm to the blocks, one such boiler could handle 12 autoclave loads daily.

This condition becomes possible if the blocks are subjected to a steam cure in ordinary low-pressure kilns in advance of going into the autoclaves. This is known as pre-curing, or two-phase curing. It is this system which offers some substantial advantages. By the time the blocks receive steam in the autoclave, initial set has taken place, and rapid build-up of steam pressure is relatively harmless.

Two-Phase Curing Advantages A number of block plant operators use this two-phase system of curing. Blocks are put into ordinary low-pressure kilns for 1½ hours, and at the end of this period they are moved into the high-pressure autoclaves, where the curing cycle is completed. Most operators using the two-phase system claim that savings in cement and improved quality of block are equal to that in block cured by the one-phase system.

The advantages of two-phase over one-phase curing would include the following:

1. Having pre-cured blocks in the autoclave permits a quicker pressure rise.

2. Time spent in the autoclave is used solely for curing, no time being lost in waiting for a complete charge and delay for allowing pre-set to occur. This permits greater daily output per autoclave.

3. The more intensive output per autoclave indirectly cuts costs of the high-pressure-steam curing system and makes 2½ or 3 cycles per 24-hour day a possibility.

4. Two-phase curing utilizes old curing kilns and boiler equipment and provides for using steam discharge from autoclaves, thus affording an additional fuel economy.

Fuel Economies Up to the present, the only heat economizing equipment available has been a heat exchanger. This device operates by absorbing heat from the condensate and transferring it to the boiler feed water. Its effectiveness is diminished because of the time factor involved. During the first two hours of block heating, boiler output is at the maximum. Meanwhile, condensate going through the heat exchanger has little heat available. During the last hour of the heating cycle the condensate is at its highest heat point, but boiler output is cut to one-third of its regular output. Because of this condition, inherent in the operation cycle of autoclaves, I am recommending a different approach to heat recovery. This, however, is applicable only to those plants still operating some of their old curing kilns. In this method, recovery of waste heat would be used as follows:

1. Boiler blow-down—this will be run to one of the old kilns.

2. Autoclave condensate — after pressure has reached 10 p.s.i. this will be piped to one or more of the old kilns.

3. Blow-down exhaust—this will be run simultaneously to several kilns, where the heat will be usefully applied and the kilns will serve as mufflers for lessening the sound of the exhaust. Total heat for four cycles of two autoclaves is equivalent to 133 gal. of oil saved per day, or roughly $2,500 per year.

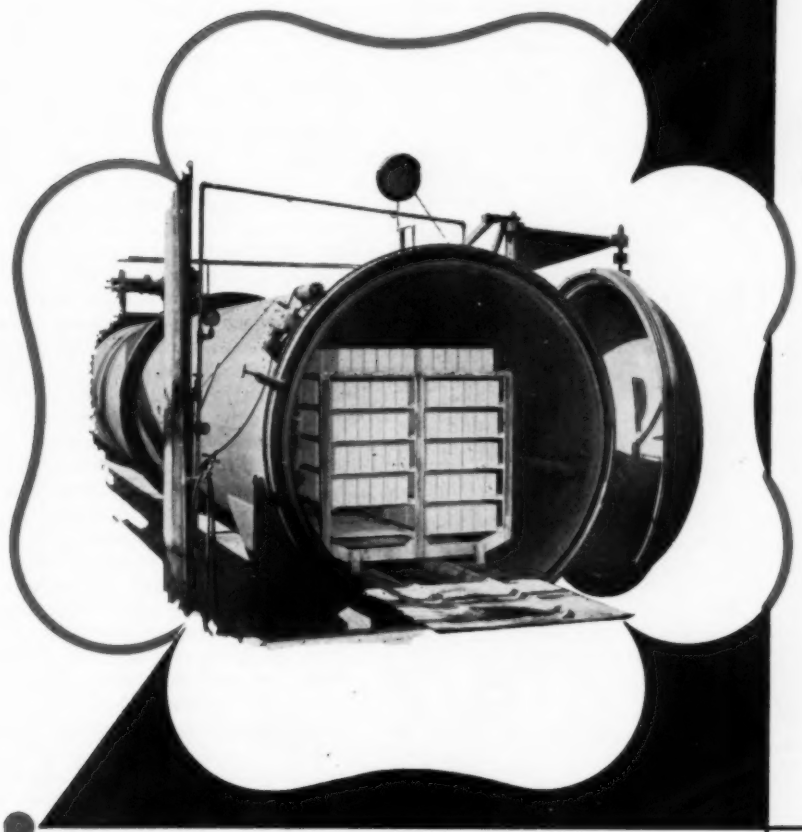
Where old kilns are available, silencing equipment may be used for muffling exhaust blasts. If not available, a Maxim-type silencer of proper size will act effectively, but if corrosion conditions exist, such equipment will be much affected. In this case a muffle pit may be used. It may be built of scrapped block, but labor of installation might make it cost close to what standard silencing equipment would cost.

Automation Automation, for higher production and lower labor cost of high-pressure-steam cured block, is both feasible and practical, but it is not, as yet, economically justified, in my opinion. As an example, for an autoclaved production of 16,000 8-in. equivalents per 24 hours, the extra cost of automation would be reckoned as follows:

Additional cost for combining two or more standard autoclaves into one long drum, installing automatic sealing and discharge chambers and a push conveyor system, rack loader, and conveyor to take blocks through low-pressure kilns, would be approximately $150,000. Annual charges for extra maintenance, for interest, depreciation, and replacements are estimated (at 15 percent) to be $22,500.

Potential savings estimated would be the elimination of three forklift truck operators at $15,000, and truck charges and operation costs at $5,000

ONE OF 4...



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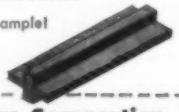

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annually, or a total of only $20,000. These approximate figures appear to indicate that automatic handling of blocks would actually increase costs. To make automation possible, based on present-day equipment costs, savings through automation should amount to at least $50,000 annually. Obviously, the comparison indicates that automation of the entire operation is some years in the future.

Corrosion My studies and research on corrosion have been carried out at my own expense. These I offer to the block industry as a contribution toward better understanding and with the thought that perhaps they will lead to the complete elimination of this costly and burdensome force. Briefly, two hypotheses are offered. One deals with the causative agents of this corrosion and how these come into being, and the other indicates ways or means for its eventual elimination.

Corrosion of Racks and Pallets Such corrosion is a common occurrence on all unprotected steel surfaces and areas. When steam is used for curing, the rate of corrosion is stepped up. With the use of cinders—and later, of slags—as aggregates, the intensity of this corrosion became more marked. In later cases where forced circulation of kiln air was added the corrosion became most serious. In general no action has been taken in the industry to eliminate this difficulty; in fact, the cost of materials and labor in painting or varnishing racks and other steel equipment often was considered greater than the cost of replacing this equipment when it had corroded to an unusable point. When this degree of corrosion occurs in autoclaves, its destructiveness is serious and becomes a matter of great concern. It affects not only racks, pallets, and the inner shell of the autoclave, but also renders valves incapable of maintaining steam pressure.

Influence of Various Aggregates Some corrosion takes place with all aggregates, the intensity of it, however, varying greatly. Sand-gravel, crushed limestone, and Haydite aggregates create the minimum corrosion effect. Corrosion from cinder aggregates varies from "just perceptible" to rather intense effects. It appears that this variation is due to the manner in which cinder aggregates have been handled prior to their use. When stored on the ground in large masses and subject to weathering, the effect is at the minimum, as is the case when cinders are purchased from dealers who have graded and stored them in the open for a period of time. When cinders are freshly made, or obtained from certain sources, without having been subjected to open air storage, corrosion effect becomes more intense. It appears that open storage of a year or so leaches the sulphur compounds away, thus reducing the possibility of sulphurous acid formations.

Expanded Slags Such materials vary greatly in their corrosive effect, according to the steel plant from which they come. Even from the same source, expanded slags will vary from batch to batch. One of my customers in the Midwest, who uses expanded slag, operates for months with no corrosion, and then for a period of several weeks he notes signs of corrosion. This would seem to indicate that there is a variation in the makeup of his slag thta is responsible for this situation. Another user in Pennsylvania has had the angles and channels of his racks eaten away almost to paper thinness in a few months. It can be said therefore, that based on experience and observation, corrosion due to the use of expanded slag varies from no effect to a moderate degree, and further, that it varies from batch to batch for the same steel plant.

Air-Cooled Slag It is common experience among users of this type of slag that the most severe corrosion shows up on the inner surfaces of the cylinders, attacking all bronze and brass fittings in gate, globe, and check valves, as well as steel equipment, and making them inoperative.

Facts About Slag Slag is the vitrified and fused by-product of blast furnace operation. One of its prime functions is to absorb all impurities, leaving a pure molten iron. A good portion of the sulphur present in coke goes into the slag instead of into the iron, and exists as calcium, ferrous, and manganous sulphides. When slag aggregates, molded into the block, are subjected to steam at 140 deg. F., a chemical reaction takes place, and there is produced hydrogen sulphide, H_2S, a gas which is easily detected because of its most unpleasant odor, similar to that of rotten eggs. The presence of this gas is a fact, not a theory, and I have often noticed it in a plant where air-cooled slag aggregates were used.

Hydrogen sulphide gas contains

two molecules of hydrogen and one of sulphur. Hydrogen is present in steam as H_2O (water), while sulphur is present in air-cooled slags. Tests indicate that the sulphur content is approximately 1.5 percent. The sulphur in H_2S comes from the sulphur in the slag. (It is true that there is about 2 percent sulphur in portland cement, but since 2 percent of 15 percent, the approximate quantity of cement in the mix, is relatively small, this source of sulphur can be ruled out as a factor in corrosion.) It is not known how the sulphur from the slag combines with the hydrogen in the steam to make hydrogen sulphide, but this combination does exist and is a fact.

My study and research into the effect that hydrogen sulphide may have with regard to the production of a corrosive agent has proved interesting, as well as rewarding. In the relationship of this chain of reactions, I am reporting only what is known, and what has been proved as early as 1860, namely, that under certain circumstances hydrogen sulphide produces sulphuric acid. This is a powerful acid which attacks all metals except lead and gold.

Where hydrogen sulphide is present is a steam-laden atmosphere of 140 p.s.i. pressure and comes in contact with iron ore (or iron rust) the rust begins to act as a catalyst. This is usually an agent which accelerates the chemical reaction or change, without the catalyst itself being altered. The action is a continuing one, the iron rust absorbing sulphur from the hydrogen sulphide and changing to iron sulphide, then releasing this sulphur and changing back to iron rust. In this action some oxygen and hydrogen is released and absorbed. The sulphur that is released combines with the oxygen in the steam and forms either sulphurous (H_2SO_2) or sulphuric acid (H_2SO_4). Either of these acids is highly corrosive, and they are the cause of corrosion in autoclaves where air-cooled slags are used.

In one instance where tests had been carried on to determine the composition of the condensate, it was found that it was highly alkaline in character. The verdict in this case was that no acid existed in the autoclave, which was not a correct conclusion, in my opinion. A truer explanation would have been that the condensate had been in contact with the surface of the concrete block, and was changed to an alkaline because of the presence of lime on those surfaces. In spite of this, much of the acid had done its damage before it had been neutralized. It must be remembered that much of the acid formed would exist as fine bubbles of mist or vapor, a good part of which would never have come into contact with the condensate found to be alkaline.

Methods of Improving Slags The slag-producing industry is now carrying out a study of autoclave corrosion due to slag aggregates. Since some time will be required for its completion and the conclusions to be drawn, I take the liberty to offer interim recommendations on this subject.

Where it is found that an aggregate creates corrosion, it is best to replace this aggregate with another that does not produce corrosion. If this is not practicable nor desirable, a partial replacement of the offending aggregate might be made, which will reduce the corrosion to a degree. Replacement of one aggregate with another is not unusual. A high percentage of block producers are using different aggregates from those they used some 10 or 15 years ago.

Slag that has weathered will produce less corrosion than will freshly made slag. In many instances a pile of slag has been confined by retaining walls built of concrete blocks. At every area of contact with the wall a whitish deposit was to be seen, indicating chemical action at that point. There seems little doubt that outside storage of slag aggregate will reduce its corrosive tendencies.

If slag were to be roasted similar to the way ores are treated, the furnace heat would drive off sulphur as sulphur dioxide, and with less sulphur in the slag there would be less corrosive action from it. If equipment were added for recovering the sulphur dioxide (a gas having commercial value) the sale of this by-product would partially offset the extra cost of this slag treatment.

At the present time, all indications show the mixes to be decidedly on the alkaline side chemically, so that additions of material would have little effect, one way or the other, on the corrosion. The use of special paints on racks, or special metals in valves permits operation without corrosion for extended periods.

Neutralizing Agents Introduction of the proper type of alkali into the autoclave during the curing cycle would reduce corrosion. Since the present corrosive agent is in the form of a mist or fine vapor, this alkali would

(*Continued on page* 205)

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Choctaw, Inc. Combines Research And Production In Arkansas Plant

methods, equipment studied for pipe, bridge slab output

A view of the new pipe machine with which pilot operations on production of 6-ft. units is being carried out.

By **BUREN C. HEROD**

Another ON THE SPOT Report

CONTINUING a tradition of growth that dates back to the company's origin in 1922, Choctaw, Inc., of Memphis, Tenn., has again added to its diversified manufacturing and construction supply operations with the recent construction of a concrete products plant in West Memphis, Ark. The new facility, situated on a 20-acre tract, was built primarily to accommodate the development and production of new concrete products such as irrigation and infiltration-proof pipe, precast bridge members, and post-tensioning operations.

Since a part of its function is in the nature of research on both the products and the methods and equipment used in their manufacture, the first operations in the new plant are involved with the development and pilot operation of a pipe machine which produces 6-ft. sections.

Company executives logically consider it more feasible to test this new machine at the new plant, where any problems of its operation can be resolved more conveniently and without any disruption in the standard production at the main Memphis facility.

Another manufacturing technique which the company proposes to test at the West Memphis location is that of post-tensioned prestressed production of concrete products. To this end, a crew is presently laying out an area on the property for the construction of casting beds.

The new plant will not be confined to research and development work, however. The production of 15- and 19-ft. precast slabs which have already been tested, proved, and accepted for bridge construction from other Choctaw operations, will shortly be initiated at West Memphis, also. In addition, facilities for production of large-diameter cast concrete pipe will be included.

For these operations, the company is currently installing a 4-compartment, 150-ton aggregate and cement bin along with a 600-bbl. auxiliary

Choctaw's new concrete products plant and a part of the storage yard at West Memphis, Ark.

Unloading equipment and storage facilities for incoming sand and gravel aggregates.

silo and under-track screw. Companion equipment includes cement and aggregate bucket elevators. A 5-cu. yd. weighbatcher with a truck hopper will be used to charge truck-mixers which will discharge directly into the forms for the precast bridge units and large-diameter pipe.

Constructed of steel framework and trusses covered with corrugated sheet metal siding and roofing, the main part of the new plant is a two-story structure providing ample head and lateral room for operation of the new pipe machine. Projecting from the north wall are three 25- by 110-ft. concrete block curing rooms, roofed with precast slabs. Outside the plant and adjacent to its railroad spur, a concrete bin storage area and under-track hopper were constructed for aggregate handling and storage.

While cement is acquired from various sources, the bulk of the sand and gravel aggregates are brought to the plant site by rail from sources in Arkansas. Two sizes of aggregates are used—one with a top size of ¾-in. is employed in making larger, 27- to 36-in. diameter pipe, while a ⅜-in. material is generally used in production of units 24-in. or less in diameter.

A model 483 Haiss unloader belt conveyor installed in a trench below the track hopper transfers the sand and aggregates (separately) to a model 482 Haiss radial unit. The latter discharges incoming materials to their appropriate concrete bin areas. From these stockpiles the aggregates are transferred by a model C Scoopmobile to a 3-compartment, 23-ton Binnabatch bin adjoining the plant building, where the two sizes of gravel and the sand are separately stored for feed to a mixer.

A weighbatcher below the bin transfers the aggregates to a 50-cu. ft. Besser mixer, where cement is added by the bag. Water for the 3:1 mix is provided manually. Following a 10-minute mixing cycle, the batch is elevated in a 50-cu. ft. skip to the hopper at the top of the new pipe machine—a McCracken TT unit. This machine, which makes pipe 6 ft. long ranging from 12 to 26 in. in diameter, is equipped with roller head packers for both the groove and bell ends of the units produced. The turntable of the machine has four stages—two of which are used for 12-, 15-, 18-, and 21-in. diameter pipe forms, while the other two accommodate the 24-, 27-, 30-, and 36-in. forms. In view of the fact that the operation of the machine is still in the experimental stage, no definite data concerning length of operating cycles, hourly production, etc., have yet been established.

Hyster 4000- and 6000-lb. lift-trucks are used for placing pipe forms on the turntable and for their removal to the curing rooms. Each of the latter has the capacity for approximately 500 of the smaller diameter pipe. Present operating provides for a steam-curing period of at least 72 hours with steam furnished at about 140 deg. F. and 15 lb. pressure by a gas-fired Kewanee boiler. Following the curing period, pipe is transferred to the storage yard by an 18,000-lb. capacity Clark Ross carrier.

In addition to such uses as culvert and sanitary systems, the company is investigating the application and market for its units in the irrigation field. Equipped with special gaskets, a number of which have undergone testing by the company, the pipe has proved highly practical for sanitary line use in gumbo areas near the Mississippi and tributary systems. It resists infiltration ordinarily caused by shifting of the pipe sections as a result of the seasonal hardening or fluidity of the gumbo in which it is placed.

Development of the company's new plant is largely attributable to E. F. Bespalow, vice-president and chief engineer. Mr. Bespalow heads

Aggregates are transferred to the plant feed and batching bin (center) by the mobile unit.

the concrete products division—one of three into which Choctaw, Inc., is organizationally divided. In addition to the new facility, this division also operates concrete products plants at Memphis and Little Rock, Ark., Columbus, Greenwood and Columbia, Miss.; and Birmingham and Montgomery, Ala. Items currently manufactured include culvert and sewer pipe, slabs, joists, highway markers, and other concrete accessories.

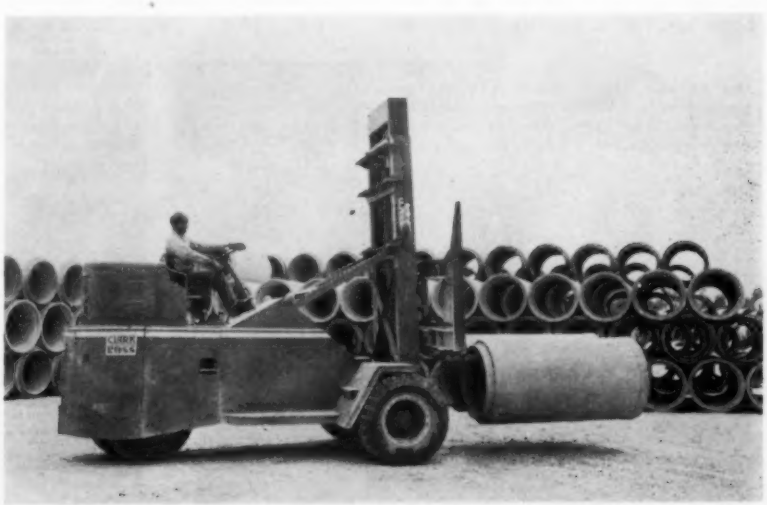
In 1923, when O. H. Miller, chairman of the board, organized the original company—the Choctaw Culvert & Machinery Company — sales of corrugated metal culvert was the firm's main activity. Subsequent expansion resulted from the acquisition of a concrete pipe producing organization in Memphis, and the establishment of six other plants throughout the Mid-South.

Growth of the firm has not been limited to the concrete products division, however. With offices and warehouses in Memphis, Little Rock, and Jackson, Miss., Choctaw's construction equipment division is a major factor in the company's overall operation. The metal culvert division has fabricaitng plants in Memphis and Birmingham.

Divisional operations and sales are supervised by T. B. Daniel, president.

In this view from the top of the pipe machine, the mix can be seen discharging into a pipe form.

After being placed in a curing room, the green units undergo a curing period of at least 72 hours with steam at 140 deg. F.



Cured pipe is transferred to the outside storage yard and stacked by this 18,000-lb. unit.

Autoclaving

(*From page* 201)

have to be a solid held in suspension, a liquid solution, or a gas. It might be a solution of caustic soda, or ammonia. Both are strong alkalies.

Conclusions We do know that hydrogen sulphide is present, and that under the existing conditions it creates sulphurous or sulphuric acid. It is not known definitely how the hydrogen sulphide is created. The best way to solve the problem is to attack it at its source, which would be the use of some treatment designed to rid slag aggregate of its sulphur-bearing compounds. There is reason to believe that the slag industry will be successful in doing this, and that the whole block industry will welcome the action, as operators are well aware of the advantages of high-pressure-steam curing.

In addition to the higher strength attainable through such curing, the product has a more attractive appearance and color, which helps

(*Continued on page* 212)

Batching Plant-on-Wheels For Problem Concreting Jobs

FOR those concreting operations which are in inaccessible locations or for those too far from stationary ready-mixed concrete plants a new mobile batching "plant-on-wheels", designed and built by the Noble Company, Oakland, Calif., often provides a practical solution.

The portable setup, complete with storage bins for aggregates and cement, can be transported on the highway to a spot near the job site to which materials can be efficiently hauled. It includes a batcher, which automatically measures the charge of each aggregate and of cement, and discharges these materials onto a conveyor belt serving the truck mixers. By this arrangement the number of truck mixer units required to provide the concrete is the minimum, and these units can be used most efficiently at the average rate of production of 45 to 50 cu. yd. of concrete per hour of operation which the plant provides. While the individual installations will vary according to the conditions encountered at different jobs, the approximate details shown in the accompanying pictures will, with some alterations, generally fit each case.

One difficult job shown is that of the concreting operations requiring the placing of nearly 460 cu. yd. of concrete per day for precasting sections of an underwater highway tunnel at Havana, Cuba. The round trip haul of the four truck mixers serving this job, from the batching plant to the casting yard, is less than a mile. There would be no immediate use for a stationary batching plant after completion of the tunnel job; so the portable setup was decided on. It was estimated that the four hauling units supply as much concrete as 20 could furnish from the nearest stationary plant.

In this plant bulk cement is delivered by truck into a receiving hopper, from which it is elevated by bucket elevator to the cement storage portion of the batching plant. Additional cement storage in this particular case was provided by a steel tank silo erected adjacent to the batching plant. Cement is drawn out of the bottom of the storage compartment by twin screw conveyors which take it to the 3-cu. yd. weigh batcher that measures all materials. The conveyors are controlled electrically to furnish the exact amount of cement.

Sand and coarse aggregates are loaded into the three aggregate compartments of the mobile batcher by means of conveyor belt at the Havana operation. The materials are dropped by gravity into the weigh batcher through double clamshell gates at the bottom of each compartment. The operation of the bin gates, permitting the exact amount of materials to flow into the weigh batcher, is also controlled by photo-electric cells, actuated by a button pushed by the single operator.

When all materials and cement are in the weigh batcher, the batch is dropped automatically to the conveyor belt below, which takes the mixture up and into the mixing drum of the waiting transit-mix truck. In the Havana installation two 2-cu. meter (2.6-cu. yd.) batches are placed in each mixing drum for a 5.2-cu. yd. load. Water is measured by means of an automatic water meter and is discharged into the truck drum together with the cement and the other materials.

The concrete in this installation is carried from the batching plant to the job site in truck mixers mounted on specially designed concrete-carrier chassis, made by the Oshkosh Motor Truck Company. On the job they discharge the concrete into buckets handled by overhead cranes for placement in the casting bed. Very rough terrain surrounding the site and the lack of good highways on that side of Havana harbor, were other influencing factors in the choice of this equipment. The batcher requires no field wiring or foundations, and on completion of the work can be easily dismantled in convenient sections and hauled to the next location. It is one of two such portable plants owned by Concreto Caribe, the contractor doing the Havana work.

On concreting operation in Texas, a Noble-Mobile batcher-on-wheels, owned by Wamix, Inc., Dallas, Tex., a large ready-mixed-concrete concern, is supplying 50,000 cu. yd. of concrete for 1,500 slab foundations on a housing project. In this instance the firm reported that the use of the batcher enables three truck mixers to do the work which would ordinarily require 11 such units operating from the Wamix stationary plant. Further, a costly 14-mile haul to the job site was eliminated by employing the portable plant. A crane unloads cars of material into the aggregate bins, and cement is delivered to the job in bulk trucks. These units discharge into a hopper feeding a cement bucket elevator to the cement storage bin.

The portable batcher charging a truck mixer with materials for concrete to be used in a Havana tunnel by means of covered conveyor belt. The belt at the left loads aggregate from a stockpile into overhead storage bins in the batcher.

This view of a mobile batcher near Dallas, Tex., shows the position of the weigh batcher. Cement storage is at the left. Aggregate storage bins (center) are served by a crane. This batcher cuts tre number of trucks from 11 to 3, and eliminates a 14-mile haul.

Reinforcing Cages for Concrete Pipe

formed on machine producing multiple sizes

FORMING the inner and outer cages of steel reinforcing used in the larger sizes of concrete pipe, to meet varied specification requirements, has always presented an economic problem to the pipe producer. A rotating wire-forming machine now seems to have solved this problem for a number of producers. This device permits the use of single, long lengths of wire of any gauge, set at any spacing, to provide the required steel area, without the necessity of maintaining a large warehouse stock of steel reinforcing mesh of various grades.

The wire-forming type of machine has been used by pipe manufacturers on the West Coast for some time due to the relative difficulty of obtaining wire mesh. Each installation is more elaborate and better able to extend the limitations in production than the preceding installations. In the eastern section of this country, where wire mesh is available, its use continued to grow until it is almost standard procedure in pipe reinforcing. However, the wire-forming machine, in its present form, might also present some interesting economic aspects to Eastern producers who have found the use of mesh an increasing problem.

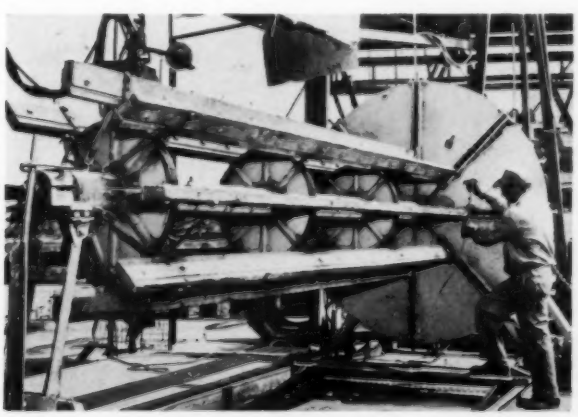
About a year ago a wire forming machine made by the Sturtevant Mill Company, Boston, Mass., was installed at the Boston plant of the New England Concrete Pipe Corporation. During the last year additional installations have been made at other Eastern pipe-producing plants, each tailored to the individual requirements, according to the dimensions of the pipe made at a given plant.

The accompanying pictures show one such installation, at the pipe plant of the North Carolina Products Company, Raleigh, N. C., where reinforcing cages for seven different diameters, three specifications, and for any pipe length are made, using just two sizes of straight wire reinforcing.

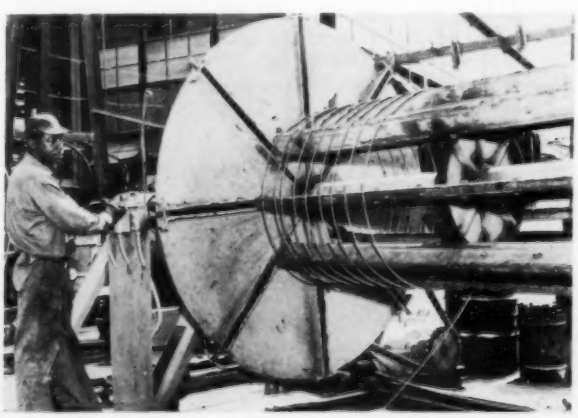
Prior to installing the new wire-forming machine this company used wire mesh reinforcing, purchased in 300- or 500-ft. rolls 4 ft. wide. This mesh had to be cut to the required circumferential lengths for the inner and outer cages, rolled into circular form, and the ends of the wires welded end to end. The inner cage was then placed inside the outer cage to make a complete reinforcing cage for a 4-ft. long section of pipe. If longer sections were to be reinforced, such 4-ft. sections of reinforcing had to be lapped and wired, or welded together in multiples to build the desired length of cage. Cage lengths which were not in even 4-ft. multiples had to be cut with wire snippers. A different mesh for each size of pipe was required to provide the proper steel areas specified. In addition, the company had to stock 15 different specifications of wire mesh for the seven sizes of pipe it made. The mesh came in bulky rolls hard to handle, and required a large amount of warehouse space for storage and ready procurement.

Frequently North Carolina Products would receive a pipe order which required a certain steel area of reinforcing mesh not in stock, and the consequent delay in shipping such mesh sometimes became serious. Further, it was not found possible with mesh reinforcing, to make the 60-in. diameter extra-strength pipe in 12-ft. long sections which are so much in demand for culverts, big municipal sewage disposal systems, and military installations. By inquiry, the company learned that marked savings averaging 1 cent per lb. could be made by using reinforcing rod instead of wire mesh.

North Carolina Products Co. now uses bright basic steel rod, meeting the A.S.T.M. Specification 82-34, for the reinforcing in the seven pipe diameters (36 through 72 in.) produced. The wire is purchased from the Tennessee Coal and Iron Division of U. S. Steel Corporation, Bethlehem Steel Company, Pittsburgh Steel Company, and Republic Steel Corporation, in 300- or 500-ft. coils. Two sizes of wire are used, No. 1 gauge (¼-in. diameter) and No. 4/0 (13/32-in. diameter). A coil of the first size contains 2,500 lineal ft. and the latter, 1,200 ft.

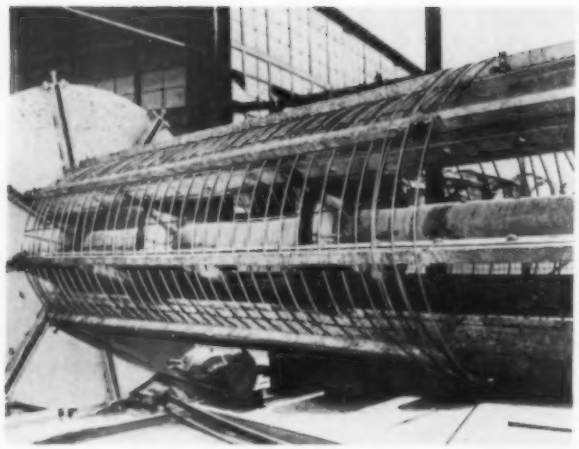


A worker inserts the wire end in the face plate end of the reinforcing cage-making machine at the North Carolina Products Company's plant, Raleigh, N. C.

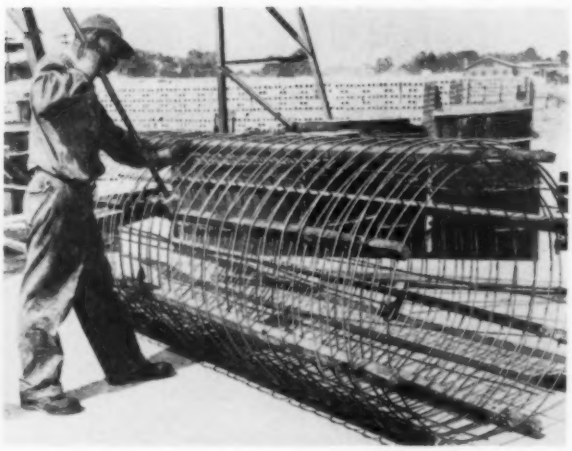


Once the operation starts, the wire is wound on the spindle arms at pre-fixed spacing. Note the motor-driven drives of the form and the spacer mandrel.

SMOOTH



Spacing boards are inserted between the inner and outer cages, and winding on of the outer cage progresses in reverse direction along the spindle form.



After stripping the completed cage from the form spindle, the spacing boards are removed and the assembly is inspected.

Wire mesh is still used for reinforcing pipe of diameters less than 36 in.

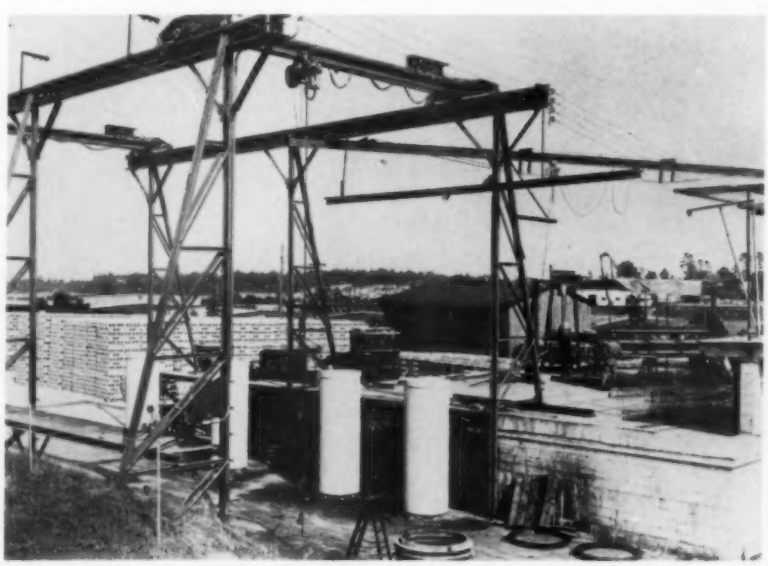
In making the cages, coils of the two sizes of wire are placed on vertical mandrels. The end of the wire passes through a fair lead and is attached to the face plate end of the machine. The machine is turned by electric power transmitted to the arms of the machine by means of a roller chain. The fair lead is also power-driven, its longitudinal movement set to wind the wire around the cage form for correct wire spacing in the reinforcing cage being made. The inside cage is completely rolled, after which the circular cross wires are welded to the longitudinal reinforcing which has been set into correct spacing in straight wire lengths.

After the inside cage is complete, boards are bolted to the eight longitudinal arms of the machine, and placing of the outside cage reinforcing is formed in the same manner. The thickness of the boards will vary according to the required distance between inner and outer cages. These are then wired together, so that they can be handled as a single unit. The cage form arms which held the inner cage are depressed by means of a collapsing mandrel operated by compressed air, which allows the completed cages to be removed from the machine form. The spacing boards separating the inner and outer cages are turned 90 degrees with a bar tool and pulled out from one end of the assembly. The finished cage is taken to the casting area nearby by electric hoist and placed over an inner pipe mold set vertically. Next, the two outer mold forms are set in place around the reinforcing cage, and casting proceeds. The cage-making takes only about an hour, or half the time originally required to complete a reinforcing cage by the conventional method using wire mesh.

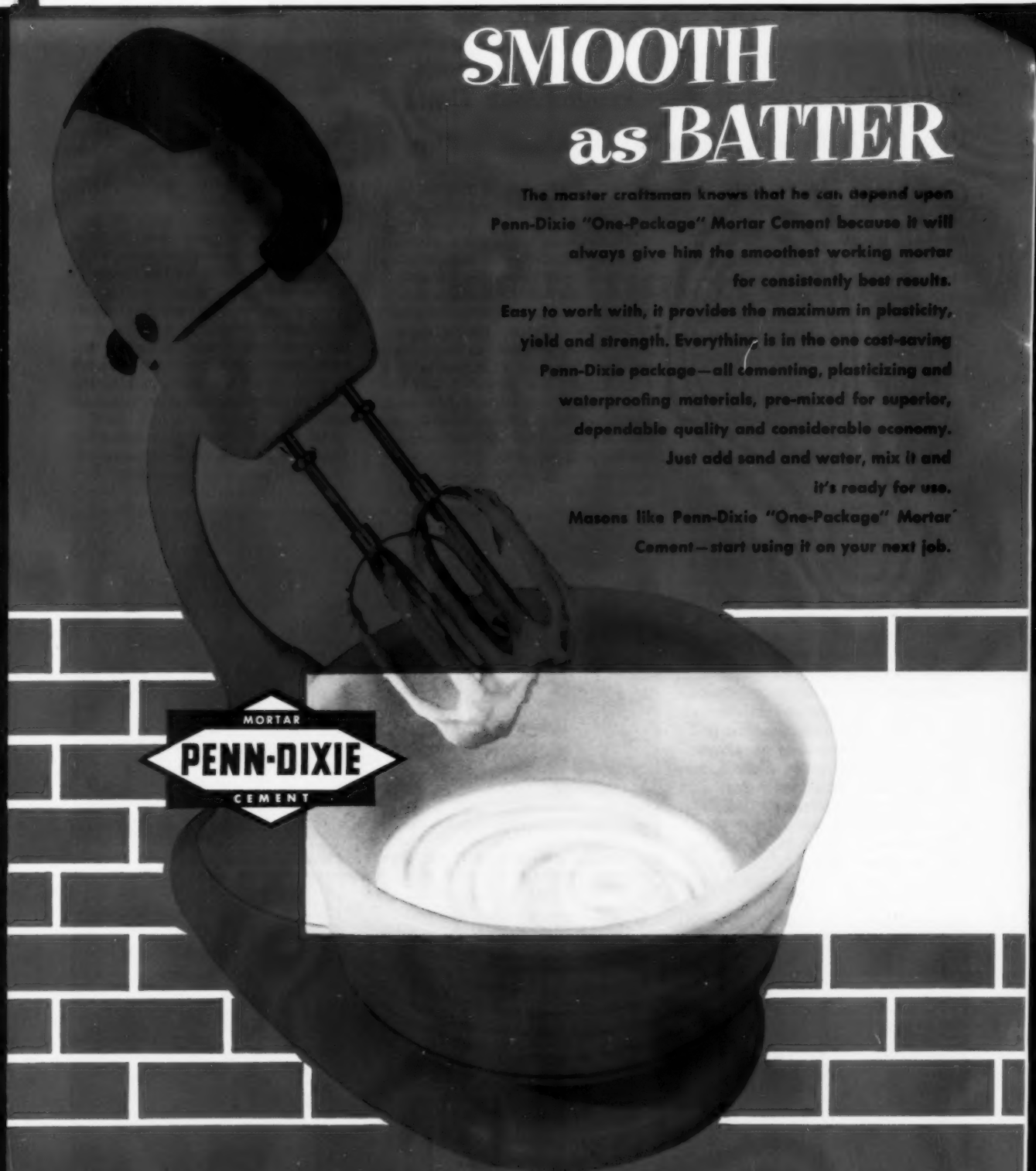
It is understood that further refinements of the wire-forming machine have been made by an Australian inventor. His method includes the spot-welding of the circular and longitudinal wires simultaneously with the winding of the inner and outer cages. This model is not yet available for use in this country. It would appear that this refinement would increase the output of the machine, but would also be relatively expensive, compared with the machine described above.

Cages made by machine are much stronger than those in which every wire of the mesh must be welded, according to James McKee, assistant manager of North Carolina Products Company, who states that the wire mesh method was found very impracticable for this reason. He feels that the fewer the number of welds, the stronger the cage will be.

The company was formed in 1939 by Mr. McKee and two partners, Henry Shaw, now manager of the plant, and A. E. Finley. Operations were started using one small pipe machine on which five different pipe sizes were made. Now the company produces 26 sizes of pipe, has a branch plant in Kinston, N. C., employs 70 people in these operations, and furnishes concrete pipe in diameters of 36, 42, 48, 54, 60, 66, and 72 in.



An overall view showing the complete operation with completed pipe in the foreground. Note the proximity of the wire cage forming operation to the pipe pouring site.


SMOOTH
as BATTER
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Mobile Radio and R.M. Service Truck Units Provide Efficient Time-Saving Combination

OPERATORS of the Yardville Concrete Supply Co., Yardville, N. J., have found out that the difference between profit and loss is simply a matter of saving time. Utilizing the most modern mobile communications, the company has effectively solved the problems that plague most ready-mix producers—of excessive down-time and lost man-hours.

Featured in this use of mobile radio is a large service truck, fully equipped to perform in the field all but major repairs on the company's fleet of 50 trucks. When a break-down is experienced by any driver, the instantaneous two-way communication is put into action, and the service truck goes to the read-mix truck at an agreed spot, where the mechanical repair is expeditiously effected. This concerted action has eliminated the loss (through hardening) of many valuable loads of concrete, as well as the costly re-conditioning of mixer drums, in which the previously plastic mixture has thus set up into stone-like masses. Anyone who has had the job of removing such concrete will well appreciate what it means to have technical assistance available at the flick of a microphone switch.

The company recently installed a Du Mont Model MCA-151-A, 75-watt base station and transmitter in the dispatcher's office and mounted 20 Model MCA-101-B mobile units on company vehicles. A permit was also obtained for the operation of 50 units from the Federal Communications Commission, since it is planned to install 25 additional mobile units as soon as possible. The practical working range of these units is 25 miles, and the units operate at 49.62 megacycles. Since the company trucks deliver concrete to many scattered job sites over an extensive area in southern New Jersey, it was important that close and constant communication be provided to eliminate costly delays. This fact necessitated the installation of a 150-ft. radio tower at the dispatching plant.

As will be noted from the accompanying pictures, the fully-rigged walk-in automotive repair truck functions very efficiently through the availability of two-way radio. Quite often it is found by the mechanic on this truck, after he has viewed the disabled vehicle, that some part not carried on the service truck must be replaced, or that he needs some additional instruction from the plant superintendent or master mechanic, to put the unit in working order. With his on-the-spot evaluation of the repair job, it can be quickly determined whether it will be necessary to send out the needed part to the spot, or whether emergency repairs will suffice.

As George Moser, president of Yardville puts it, "With radio, the

(*Continued on page* 214.)

Radio-equipped repair truck of the Yardville (N. J.) Concrete Supply Company making on-the-spot repairs, as the result of a radio message from the driver reporting a malfunctioning engine.

Left: The dispatcher at the plant relaying information to truck drivers within a radius of 25 miles. Immediate replies advise the positions of all vehicles and supply other pertinent information.

Right: The mechanic in the fully-equipped walk-in service truck unit can evaluate the repair job on a disabled truck and receive necessary instructions from the plant supervisor to expedite the repair or parts replacement.

Drive Mechanisms In Industrial Trucks

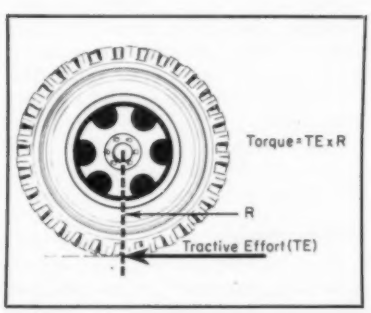
Another P&Q Exclusive

HOW to select an industrial truck is a recurrent problem with every concrete producer. In making a selection he must first determine whether the truck in question has the capacity, speed, and handling ability needed to do his work. Once these factors are established, he then considers the construction of the unit, especially the drive mechanism. The following discussion starts where the usual how-to-select-a-truck story stops, and the four helpful hints, together with the accompanying illustrations, may prove of interest and value to producers in selecting industrial trucks.

When you are buying a powerful industrial truck—fork, platform, or tractor unit—what do you look for? Performance and cost come first, of course. Next is construction.

To help you in judging engineering design, the following tips with regard to drive mechanisms have been culled from a study by H. E. Milz, vice-president in charge of engineering, The Mercury Manufacturing Company, Chicago, Ill. Of all construction features, the driving axle is perhaps the most important single compartment. It converts the energy received from the power source (electric motor or gasoline engine) into torque—the force that drives the wheels.

You Need High Torque—Torque is simply the twisting force exerted by a rotary force working through its radial distance. For an industrial truck, the torque needed varies with the tractive effort, which depends on the combined weight of both truck and load and also on the maximum grade.



A heavy load and a steep grade would require a high torque, which in turn would cut the truck's operating speed drastically. Starting the truck also requires high torque. Therefore, as an industrial truck needs both high torque and a slow speed at the driving wheel, a speed-reducing mechanism must lie between wheel and motor. Pick a series-wound motor to give you high starting torque.

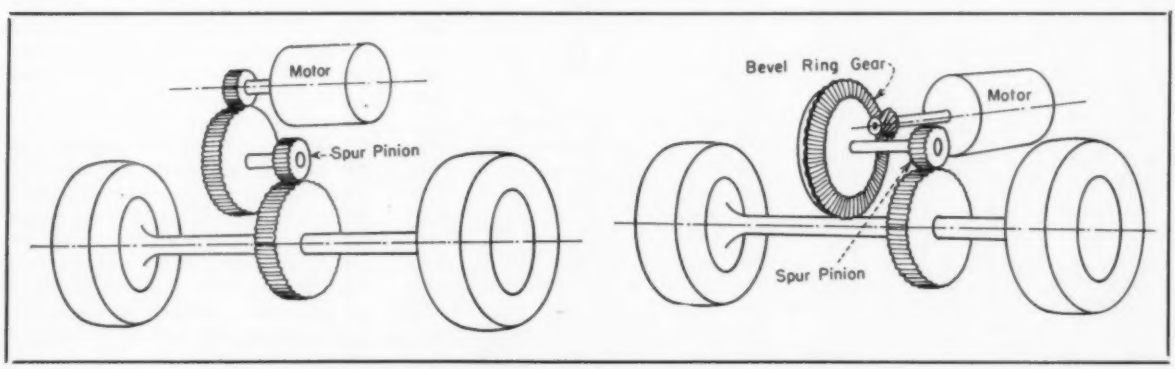
You Have to Reduce Speed—You can get necessary speed reduction by worm gearing. It is quiet and simple, but it is also inefficient (70 percent or even lower) under heavy loads and slow speeds.

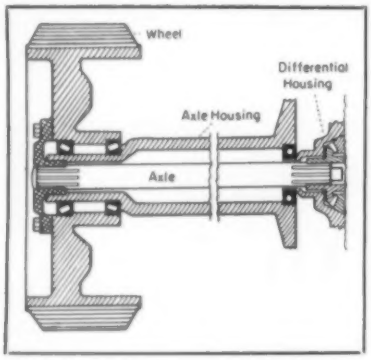
Internal gearing, generally used along with a bevel-gear reduction, is highly efficient over a wide load-and-speed range. A second advantage—reduction of torque on drive shaft and differential—is especially desirable on steerable wheel axles as universal joints can be made smaller. But internal gearing is costly, complicated, and difficult to enclose and lubricate.

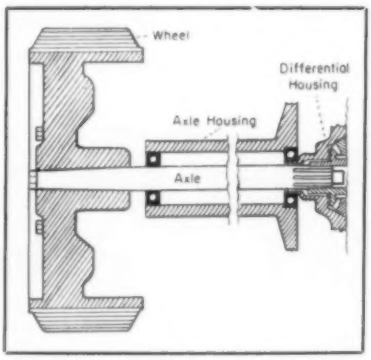
Spur gearing, too, is efficient over a wide range of loads and speeds. Its principal disadvantage is that straight spur gearing would require placing the motor parallel to the drive shaft, that is, cross-wise of the truck. Such a position would make inspection and maintenance difficult. This drive is also noisy.

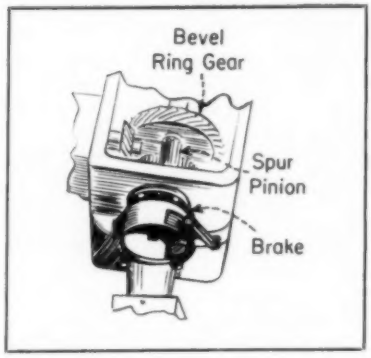
Combination bevel and spur gearing permits placing the motor lengthwise of the truck. This drive makes all parts accessible, yet retains excellent efficiency over a wide speed-and-load range. The first reduction—spiral bevel pinion and gear—is smooth and quiet at high speeds. The second reduction, with spur gears, runs slowly enough that it, too, is quiet. The combination presents no lubrication problems and permits the use of wheel brakes.

The Best Axle for Your Job—Next, you must pick the type of drive axle best suited to your work. The so-called dead axle and the plain live axle are obsolete in industrial-truck design. The semi-floating axle, desirable for light trucks as it is economical to manufacture, has axle shafts relieved of all driving-gear tooth pressure. Bearings in the axle housing, instead of the axle shafts, carry the differential gear. Axle shafts, made smaller in diameter than the bore of the differential-housing hubs, pass through without touching them; this establishes driving connection with the differential bevel gear at the splined ends of the shaft.









A still better design is the full-floating axle, with the outer ends of the driving shafts relieved of all bending stress in the same way as the inner ends. Axle tubes extend entirely through the wheel hubs, and wheel bearings are mounted on the outside of these tubes. The axle shafts extend through the housing and their outer ends connect with wheel hubs through driving dogs or positive clutches.

For heavy-duty service the full-floating axle is considered the best. This type of axle also permits removing the drive shaft without removing the wheel or the axle. A modification of the full-floating design transmits driving torque from shafts to wheels by bolted driving flanges.

Axle mounting is an important feature to check. The drive axle must be attached securely to the frame to absorb the heavy torque reaction in starting, stopping, and climbing grades.

Platform-lift, burden-carrying, and certain tractor units should have steerable drive axles for good maneuverability. Such an axle has steering knuckle pivots at the housing ends, with the wheels mounted on the knuckles and driven through a universal joint in the drive shaft. With a single ball-type universal joint, the steering angle on this type of truck is limited to 30 degrees.

You Need Good Brakes—For safe operation, industrial trucks must have powerful, dependable brakes. They should be located on the driving axle as close to the drive wheels as possible. Wheel brakes, preferably of the internal expanding type, are best, except where space does not permit their use and also on trucks having steerable drive axles. A desirable feature on large fork trucks is that of spring-applied brakes which go on automatically when the driver leaves the truck.

When wheel brakes cannot be used, Mr. Milz prefers to put the brake on the spur pinion shaft. This practice avoids transmission of braking force through the bevel-gear reduction and gives a smoother action than is possible with the brake mounted on the motor shaft.

P. C. I.

(*From page* 194)

including two beam fatigue testing machines; six standard static load testing machines ranging in capacities from 50,000 to 400,000 lb.; two types of concrete mixers, scales, and other equipment for casting concrete; and a large temperature and humidity control room.

Investigations conducted there included collecting information on the following: various curing methods and related effects on concrete and strands; beams subjected to repetitive loadings, to determine fatigue life and resistance to bond; stress loss due to plastic flow and shrinkage of concrete; and the feasibility of prestressing long columns. Dr. Kluge gave acknowledgement for the material reported on to Dr. A. M. Ozell, College of Engineering, University of Florida.

Professor Lin spoke at length on *Economics of Prestressed Concrete.* Instead of referring to isolated instances as a basis for comparing prestressed concrete with other types of construction, Dr. Lin took as an example the basic cost data on the various materials, formwork, falsework, etc., which make up a bridge. His study in this phase of the whole subject is so essentially valuable that we hope to publish the entire paper in the CONCRETE MANUFACTURER.

Walter L. Lowry Jr. was the principal speaker at the banquet which climaxed the convention. Mr. Lowry told the gathering that our colleges are turning out only 23,000 engineers a year, whereas Russia is getting new engineers at the rate of 60,000 annually. The peak of engineering graduates in the United States was reached in 1950, when 52,732 engineers were graduated.

J. Ashton Gray, Stresscrete, Inc., Daytona Beach, Fla., was elected president of the institute for the coming year, and Ben C. Gerwick, Ben Gerwick, Inc., San Francisco, Calif., vice-president. Douglas Cone, Florida Prestressed, Inc., Tampa, Fla., was named secretary-treasurer. Directors elected for 1956-57 include the following: George W. Ford, past-president of the P.C.I., vice-president of R. W. Wright and Son, Inc., Fort Lauderdale, Fla.; A. C. Bruce, Woodstock, Ontario, Canada; Charles Zollman, Springfield, Pa.; Harold A. Price, Basalt Rock Company, Inc., Napa, Calif.; Carroll Strohm, Nashville Breeko Block Company, Nashville, Tenn.; Werner Rosch, Lewis Manufacturing Company, Miami; and Peter J. Verna Jr., Concrete Materials, Inc., Charlotte, N. C.

The institute will hold its third annual meeting in August 1957, in San Francisco, Calif.

Autoclaving

(*From page* 205)

materially to obtain wider use and extended applications. It is my belief that savings in the costs of autoclaving will become greater as better methods are introduced to the industry. Indirectly, high-pressure-steam cured units are advantageous to the entire block industry because by making a better block, the tendency is to up-grade all units to meet the competition which comes about. Better block will cut down block failures, and this tendency will go far in reducing any prejudice that may exist against concrete block in general. This result in turn will promote greater use and acceptance of all concrete blocks.

Material Service Corp. Sets New Job Record for 1-Day Pour of Concrete

On June 16 Material Service Corporation, reportedly Chicago's largest ready-mix concrete producer, set a new Chicago record for delivery of ready-mixed concrete to a job in a single day, when it supplied 1,278 cu. yd. of concrete in the construction of a grain elevator.

The job, an integral unit in the expansion of the Lake Calumet Harbor facilities, is being handled by James Stewart Corporation, Chicago contractors. Dale Long, superintendent for the contractor, said that 7,882 cu. yd. of ready-mixed concrete had been placed in the 32 silos forming the third unit of the elevator in the eight days between June 11 and 18. He pointed out that the record was more impressive in view of the fact that the silo type of construction is more difficult to place than a slab type, such as was used in the previous record set by Material Service in placing 1,250 cu. yd. in the Michael Reese Hospital job (also in Chicago) in 1954.

(Left to right) Colonel Henry Crown, chairman of Material Service Corporation, Chicago, shows Judge Walker Butler, Governor Stratton, and Mayor Daley of Chicago a grain elevator job on which a record placing of 1,278 cu. yd. of ready-mix concrete was made on June 16.

This is another instance of the great progress made by the producers of ready-mixed concrete in large cities, where the efficient use of large-volume truck mixers in great numbers enables the placement of huge quantities of concrete in short periods when this is required. It is inconceivable that such a quantity of concrete could be placed in a single day's operation by job-mixing.

The Celotex Corporation has begun construction of a $6,000,000 gypsum products plant at Fort Dodge, Iowa. Completion is set for 1957.

Concrete Block in Catch Basin And Manhole Construction

AN interesting and informative table was recently distributed to members of the National Concrete Masonry Association, presenting the results of a recent survey among member plants, concerning the allowable use of solid concrete block in catch basin and manhole construction in their respective areas.

We have been informed by the association that copies of this table are available on request from producers interested in these data. It includes reports from 125 cities in 41 states, Alaska, Canada, and Puerto Rico, giving the usage permitted and the essentials of the specifications in each location.

Indications are that concrete masonry is an approved construction material for sewer appurtenances in most states and municipalities. Usage is definitely approved in 65 percent of the surveyed localities, while only 17 percent prohibit it. The remaining areas are untested, due either to lack of sufficient market or to local production of other cement products for this work.

Generally, the A.S.T.M. Specification for Concrete Masonry Units for Construction of Catch Basins and Manhole (Designation: C 139) is the favored standard for the quality of such units although exceptions are noted. The most common single specification requires that the masonry units comply with the A.S.T.M. requirements as to compressive strength (2,500 p.s.i.) and maximum absorption (8 per cent) and have a minimum thickness of 6 in. In some instances the thickness requirement is increased when the height of the manhole (depth below grade) exceeds a specified value (usually 12 ft.). Variations in other specification details may be noted, ranging from a compressive strength requirement of 5,000 p.s.i. in the highway department of one state, to the absence of minimum standards of any kind in some localities.

Fear of concrete corrosion by hydrogen sulphide sewer gas compounds apparently has caused a few engineers and public health officials to withhold approval of concrete masonry for sanitary sewer appurtenances. Four such localities (in Kansas and Florida) were encountered among those permitting concrete masonry usage in storm sewers, and several of those prohibiting usage gave fear of H_2S gas attack in explanation. This fear has been overcome in most areas by the persistent efforts of local block producers. An N.C.M.A. member in western New York has recently sold concrete brick, for manhole and catch basin construction, to his community on an experimental basis. This will open up a market which, until now, has gone exclusively to clay products. Similar successful efforts have been reported in other areas.

Hydrogen sulphide gas can combine with water to form a weak acid which may cause slow deterioration of concrete. However, hydrogen sulphide gas is not present in well designed, properly functioning sewer systems. The gas forms only when sewage is allowed to stand idle in sewer pipes and manholes. Tests have shown that fresh sewage does not produce hydrogen sulphide in appreciable amounts unless it is allowed to stand for two or three days. Since the gas has a very offensive odor (a rotten egg smell) it is seldom that public opinion will allow its formation to persist for any length of time.

Where formed, the attack by hydrogen sulphide would not be confined to concrete masonry. The mortar joints of any masonry manhole wall would be subject to similar deterioration, whether the masonry units be of concrete or clay. Actually in the normal flow of waste through a sanitary sewerage system, very little of the sewage comes in contact with the manhole walls as compared to that amount which flows through the sewer pipes and over the manhole inverts, which in many cases are also of concrete. Then, too, there is a much better opportunity for the gas, when it does form, to escape from a vented manhole than from sewer pipes or other enclosures. Thus it wuold seem that failure to approve concrete masonry which meets the A.S.T.M. strength and absorption requirements for use in the construction of manholes and catch basins is unwarranted on the part of specification writers. Continued usage in the many areas represented by this survey is ample demonstration of concrete masonry's satisfactory service.

Of Plants and People

Gordon's Concrete Products Company, Fort Collins, Colo., recently opened a new plant for the manufacture of a wide variety of concrete masonry units. The owner, Gordon Walker, announces that about 1,400 blocks per day will be made with automatic weighing, mixing, and molding machinery.

James F. Mack, president of the Mack Lumber Company, Hollywood, Fla., recently announced the acquisition by his company of the assets, equipment, and machinery of the Marietta Concrete Corporation of Florida, Hollywood, Fla. The Mack firm has been actively engaged in the ready-mix concrete business since 1955.

Leo Hayes, owner of the Pittsfield Concrete Products Company, Pittsfield, Ill., a ready-mix concrete manufacturing firm, has combined with Earl Ingersol of Pittsfield, to form a new firm, to be known as Pittsfield Block Company. The new company will make all types of Haydite and concrete block and brick at the rate of 180 units hourly.

New concrete block production will be available soon from the Elks Concrete Products Company, Lafayette, La. The firm is owned by Samuel Hicks and Brooke Hamilton, who announce the purchase of a $38,000 Columbia block machine and equipment for producing 17 different types of concrete units, at the rate of 5,000 8-in. equivalent units daily.

Robert A. Harris has been named service representative for the North Texas area by the Dallas Lightweight Aggregate Company, a subsidiary of Texas Industries, Inc., Dallas. Mr. Harris, a registered architect and engineer, was formerly with the Texas Structural Products Company. In his new post he will assist architects in the use of Haydite lightweight concrete.

According to W. A. Moore, the Tri-Co Ready Mix Company will begin turning out its product soon at Fordyce, Ark. Associated with Mr. Moore in the venture is Mansford Farthing of the Fordyce Building Materials Company.

Knoxville, Tenn., has a new industry, the Knoxville Concrete Pipe Company. This concern is headed by Thomas G. Johnson of Nashville. Major items of equipment have been supplied by Sherman Concrete Pipe Machinery, Inc.

Mobile Radio

(*From page* 210.)

repair truck can communicate with the disabled truck mixer and with our dispatcher, and in this way we get the repair done in the shortest time and also get word back to the dispatcher as to how long the job will take."

Mr. Moser reports other savings. For example, trucks that are returning from a job toward the end of a working day can report the job status, thus enabling plant personnel to secure operations sometimes an hour earlier than would be possible otherwise. With the fleet of 50 vehicles, 29 of which are ready-mix trucks, the efficiency of reliable, instantaneous two-way communication can easily be appreciated.. He sums it up briefly that the same work is now done with ten trucks that previously required eleven truck units to accomplish.

SMITH SEPTIC TANK FORMS and HANDLING EQUIPMENT

for making Tanks of 500, 600, 750 and 1000 gallon capacities

THIS FORM *PRODUCES THIS TANK*

PRECISION BUILT
•
WELL REINFORCED
•
POURS AND STRIPS UPRIGHT
•
LIGHT WEIGHT FOR HANDLING
•
MINIMUM TIME FOR STRIPPING AND SETTING UP

Premium Quality Reinforced Concrete Septic Tank

All sections assembled with wedge bolts for easier stripping. Handled by 2" holes in wall directly on center of each side 19" down from top. Hoist descends into tank . . . eliminates need for a high rig.

Form includes: Pouring Pan, three section septic tank lid pans and pick up bar for handling. Inside form has tapered wedge strips in each corner that slide out easily allowing plenty of clearance for stripping.

THERE IS NO ROYALTY ON SMITH STEEL SEPTIC TANK FORMS OR TRUCK HANDLING RIG

THE SMITH SEPTIC TANK HANDLING RIG. CAPABLE OF HANDLING 3 TANKS AT ONE LOAD.

WRITE OR WIRE FOR DETAILED SPECIFICATIONS AND PRICES.

COOK & INGLE CONCRETE PRODUCTS CO. 305 Fernwood Ave. • Phone 1697 DALTON, GEORGIA

Lift Truck Shock Absorbers Pay Dividends For Block Men

The easier the ride a forklift truck gives a load of block, the less damage there is to the load and equipment.

A device which absorbs the bumps, jolts, and lurches of the lift truck, and floats the load along as the truck travels, is a bladder-type pneumatic accumulator made by Greer Hydraulics, Inc., Jamaica, N. Y. It has been adapted to serve as a shock absorber for materials-handling equipment, protecting the load-bearing mechanism. When mounted and connected into the hydraulic circuit which activates the lift cylinder, the accumulator cushions the fork-and-upright assembly.

A closeup of an accumulator installation, showing the hydraulic cylinder and accumulator unit which eases travel shocks to loads and prevents damage.

Installed by the block company's own mechanic, the unit costs less than $100 per truck, and includes a mounting kit with brackets, valve, Tee connection, and lines to fit it to any type of forklift truck. The only maintenance equipment needed is a bottle of dry nitrogen and a charging and gauging assembly with a pressure gauge. The accumulator unit is simply a small steel shell containing a rubber bag which has been precharged with inert gas, usually nitrogen. At rest, the precharged bag fills the shell. Any impact against the hydraulic fluid in the circuit, such as that caused as the truck moves, or as the load is lifted or lowered, forces hydraulic fluid into the shell, where it is cushioned by the gas in the bag. The capacity and precharge of the device are specifically in accordance with the size of the lift truck and the operating pressure of the hydraulic system. Usually a 1-gal. size accumulator is specified for the trucks used in block plants.

A forklift truck equipped with a shock-absorbing accumulator at the Best Block Company, Metuchen, N. J.

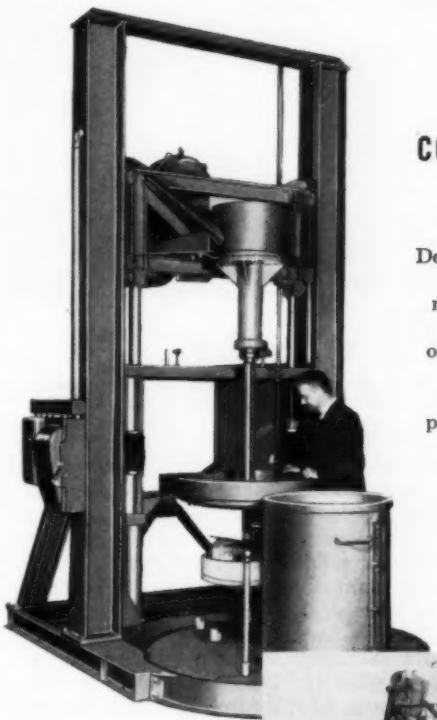
*take it from a successful pipe mfr.**

THE MARTIN MODEL 56

Packerhead

CONCRETE PIPE MACHINE IS THE ONE TO BUY!

Designed and produced by the pioneer company in conduit irrigation, the new MARTIN Model 56 brings the time-proven "Packerhead" process of concrete pipe production to a new peak of perfection. In addition to simplicity of operation, speed of production (from 4" to 24" pipe) and extreme ease of maintenance, the Model 56 produces pipe lengths up to 48", provides power-driven turntable and a 50 horsepower motor for its main drive.



* The Johnson brothers, owners of CO-VAL Concrete Pipe Co., Coachella, Calif., have operated a highly successful concrete pipe plant for over 10 years, using Martin "Packerhead" pipe machines. They enthusiastically endorse their new Martin Model 56.

For complete information write:

MARTIN IRON WORKS LTD.

P.O. Box 2857 TERMINAL ANNEX, Los Angeles 54, Calif.

Canadian Official Predicts Use of Standardized Units

Sweeping changes in construction methods through the use of new types of building products were predicted by officials of the National Research Council and the Concrete Masonry Products Association at Ottawa, Canada.

Robert F. Leggett, director of the N.R.C. building research section which met with industry representatives, told those in attendance that extensive tests had shown labor and costs could be saved by switching to standard-size products, rather than using several sizes as at present.

Mr. Leggett, who is also a member of the Canadian Standards Association, predicted that that group will adopt standard-size concrete blocks and brick units at its meeting next fall.

Unit Masonry Association Elects W. B. Royse President

At a recent meeting of the Unit Masonry Association in Kansas City, Mo., the following officers were elected: Weldon B. Royse, Grandview, Mo., president; John L. Strandberg Jr., Concrete Building Units Company, Kansas City, vice-president; and Robin E. Walker, Carter-Waters Corporation, Kansas City, treasurer (re-elected).

A special feature of the meeting was the awarding of prizes in the apprenticeship contest sponsored by the association. Completion certificates were also awarded to 20 apprentice bricklayers.

Flexicore's Yearly Target Set at 2,000,000 Ft. of Slabs

A sales goal of 2,000,000 ft. of Flexicore concrete construction slabs per year has been set for the sales department of the Mid States Concrete Products Company, South Beloit, Wis., which met recently to plan a campaign.

President of Mid States is Charles V. Harker, whose father the late George B. Harker, founded the Illinois-Wisconsin Concrete Pipe Company, now known as the Lock Joint Pipe Company. George C. Harker is vice-president in charge of sales for Mid States.

Founded about ten years ago, the Flexicore business has increased its sales from 80,000 ft. annually to more than 1,000,000 ft.

Promotions Won by Seven On Los Angeles Firm's Staff

Elliott E. Brainard was recently elected vice-president of the American Pipe & Construction Company, Los Angeles, Calif., according to an announcement released by Robert V. Edwards, president.

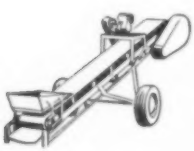
The following promotions also were announced: R. J. McConnell becomes vice-president of sales; D. E. McCoig and L. R. Tollenaere were elected vice-presidents; and Dudley A. Dunkle is now senior vice-president and a member of the board of Americoat Corporation, a subsidiary.

George Mordy and W. Allen Grubb were elected to the boards of Pipe Linings, Inc., and Hooper Concrete Pipe Company, respectively. These firms are also subsidiaries of American Pipe and Construction Co.

Frederick W. Drury Jr., has been named general manager of admixtures, Inc., Pasadena, Calif. He was formerly associated with the Airox Company. Author of various articles on concrete, Mr. Drury published *Color in Ready-Mixed Concrete,* a joint paper with Frank D. Davis, which appeared in the Concrete Manufacturer in the June, 1956, issue. Mr. Drury will maintain offices in Pasadena.

MIX ON-THE-JOB with the
WILLARD "TASK FORCE"

WILLARD
Weigh-Batch Loader


WILLARD
Mixer Loading Conveyor

WILLARD Truck Mixer

GET MORE DONE with less expense with Willard portables like the typical company shown above. Their fast-operating spread consists of self-loading Weigh-Batcher, Mixer Loading Conveyor and two Truck Mixers . . . all bought for a fraction of the cost of a big stationary plant. Only two drivers, a batcher man and a dispatcher are needed.

You take Willards right to the project for maximum efficiency . . . using multiple stock piled aggregates and bulk cement for specification concrete. Moving to a new location requires no effort beyond digging a shallow pit for the foot of the conveyor. The "Willard Way" is the time-saving way!

"Wheel the right mix at the right time at the right cost to the right place with Willards."

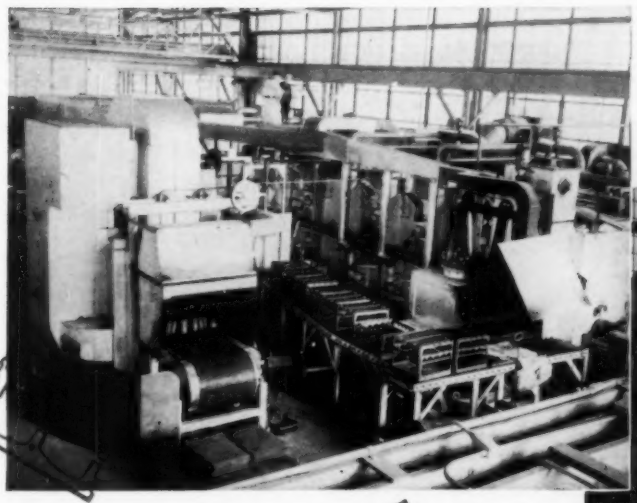
WRITE FOR THE "WILLARD WAY" BOOKLET

Manufactured in Los Angeles California and Galion, Ohio
WILLARD CONCRETE MACHINERY SALES CO.
11700 Wright Road
Lynwood (Los Angeles County), Calif

READY MIX *"the Willard Way"*

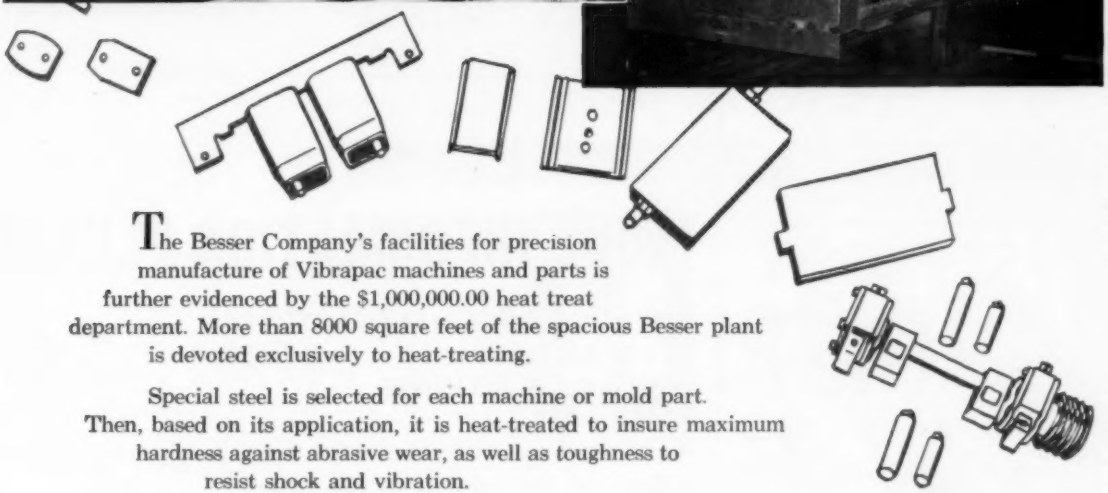
Million Dollar Heat Treat Department

Insures QUALITY CONTROL!



Interior view of the million dollar Besser Heat Treat Department.

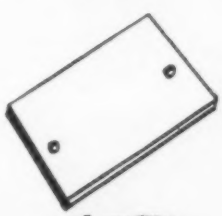
Car furnace showing car loaded with parts before entering furnace.

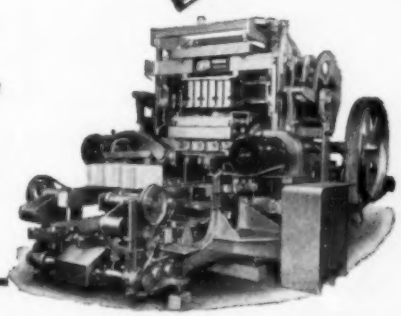


The Besser Company's facilities for precision manufacture of Vibrapac machines and parts is further evidenced by the $1,000,000.00 heat treat department. More than 8000 square feet of the spacious Besser plant is devoted exclusively to heat-treating.

Special steel is selected for each machine or mold part. Then, based on its application, it is heat-treated to insure maximum hardness against abrasive wear, as well as toughness to resist shock and vibration.

Tip to Block Makers — You can save money by buying Besser Standard Division Plates because they are made of special alloy steel, heat-treated to a Rockwell "C" hardness of 63/65 and a case depth of 5/64" per side — then tempered to guarantee uniformity of hardness and finally 100% inspected.





BESSER Company

BOX 131, ALPENA, MICHIGAN, U.S.A.

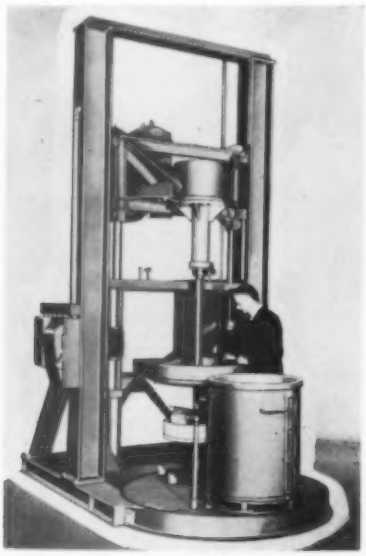
Complete Equipment for Concrete Block Plants

BESSER Genuine PARTS

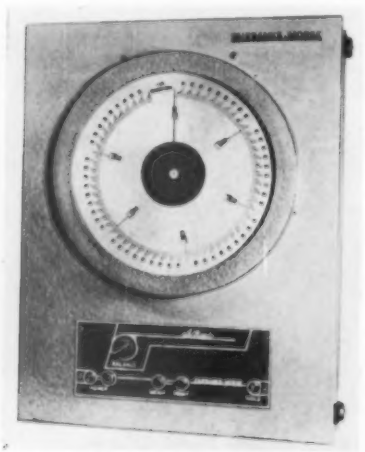
GENUINE **VIBRAPAC** *PARTS ARE MADE ONLY BY BESSER*

A 8898-1PC

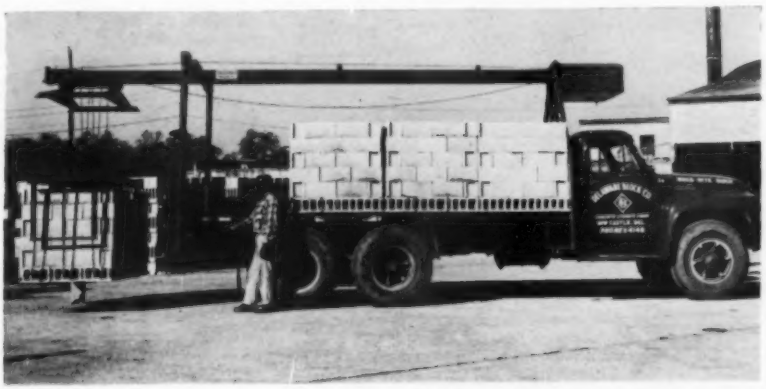
CM New Machinery and Supplies



• A pioneer of the packerhead process of making concrete pipe, Martin Iron Works, Ltd., has introduced its improved Model 56 machine. The Model 56 combines multiple-speed transmission, an adjustable hydraulic system, and a flywheel to provide the proper troweling and packing action of the packerhead. The machine is suitable for all diameters of pipe, of from 4 in. through 24 in., and in lengths up to 4 ft. Production of the Model 56 is fast and economical, with the minimum of noise and jarring. (101)



• A complete line of weighing instruments employing electronic load cells has been developed by Fairbanks, Morse & Company. Model CDO, illustrated, translates the weight message from an electronic load cell so that automatic business machines can accept and process the weight information. In addition to electronic scales, the new line includes two electronic weigh-batch control systems, the Batchetron and the Electronic Program Control. (102)



• Movable rear posts which allow full utilization of an 8-ft. wide body are featured on the latest self-unloading block-handling truck manufactured by A. Cresci & Son, Inc. All mechanism is overhead, providing a clear platform at all times. Hydraulically operated, the body has dual controls on the side and a non-jamming safety factor. Low maintenance costs, simplicity of design, ease and speed of operation, are among its advantages. The body comes in 3- and 4-ton capacity. (103)

AUGUST, 1956

MORE INFORMATION PLEASE

THE CONCRETE MANUFACTURER
431 S. DEARBORN ST.
CHICAGO 5, ILLINOIS

Please send more information on items described in editorial columns of this issue, as circled below.

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111 112 113 114 115 116 117 118

Name_____ Title_____

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PRASCHAK MIXERS

America's Popular

50 CU. FT.

$2630.00

complete less motor

Available in right or Left hand drive, with or without clutch.

Available from stock WITH MOTOR, MOTOR MOUNT, DRIVE—COMPLETELY ASSEMBLED.

(Drive Guard Removed For Picture)

"The Mixer That Can Take It"

OTHER CAPACITIES:

8 Cu. Ft.	$ 680.00
16 Cu. Ft.	$ 900.00
21 Cu. Ft.	$1015.00
30 Cu. Ft.	$1430.00

—Price Less Motor—
(Compare the mixer, not the price!)

WE ARE SELLING MORE PRASCHAK MIXERS THAN ANY OTHER MAKE!

PRASCHAK MACHINE CO. MARSHFIELD, WIS.

PURE SYNTHETIC IRON OXIDE

HTS GOLDENROD

(High Tinctorial Strength)

LIGHT - FAST
In Sunlight and Weather

INEXPENSIVE
1 lb. Equals the Coloring Power of 2 lbs. of Competitive Grades

VARIETY
Available in Several Shades to Obtain "Adobe" - "Suntan" - "Amber" - "Buff"

Write us or our nearest representative for working samples and more detailed information.

FRANK D. DAVIS COMPANY

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TRIM TYPE
STEEL DOOR FRAMES
FOR RESIDENTIAL AND LIGHT CONSTRUCTION

GIVE YOUR CUSTOMER THESE ADVANTAGES

- FASTER INSTALLATION
- LOW COST
- SUPERIOR CONSTRUCTION

FOR BLOCK PRODUCERS THIS MEANS

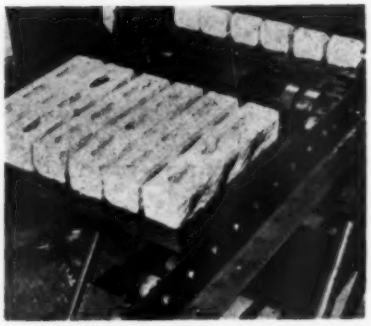
- EASY EXTRA SALES
- EXTRA PROFIT

ONLY A SMALL INITIAL INVENTORY REQUIRED

WRITE TODAY FOR FREE COMPLETE INFORMATION

RICHMOND FIREPROOF DOOR COMPANY
NORTHWEST "F" STREET, RICHMOND, INDIANA

• Vitricon, a new spray-on-wall surfacing, is a durable, decorative, economical, cold glazed cement finish. When sprayed on, the mixture becomes an integral part of the concrete, masonry, or plaster surface without bonding, baking, or pressure casting. It is applied to the wall on site by skilled technicians. After several spray applications, including several water spray treatments to retard curing, the Vitricon facing forms a monolithic structure with the concrete block, leaving a high-glaze, colorful, long-wearing surface, resembling mottled tile. Its physical properties are approximately equal to high-strength cement — it is hard and glossy, and impervious to most chemicals. Color combination are limitless. Vitricon can also be factory-applied to block. Concrete block manufacturers are being franchised to produce factory-glazed Vitricon surfaced block by Vitricon, Inc. ◄ (104)



• A new, automatic block slumper that insures absolute height control of slumped block has been developed by the Columbia Machine Company. Operating on a power rollaway, the slumper is completely automatic. When used with a rich, near-plastic mix, the slumper gives an unusual variety of face designs, producing a finished block similar to rough hewn stone. ▲ (105)

the ANDREWS TUBULAR SCREW CONVEYOR

In Portable or Permanent Models

can "TAKE IT" and "DELIVER"

Because It's Designed and Manufactured For Heavy Duty Service

Yes, it takes The ANDREWS Tubular Screw Conveyor to get fast, efficient, continuous movement of:

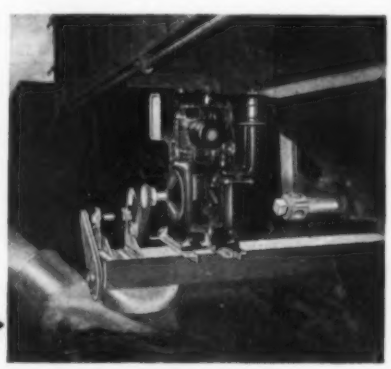
CEMENT
GYPSUM
PULVERIZED LIMESTONE
AGGREGATES
CALCIUM CARBONATE
PHOSPHATE
ASPHALT FILLER
ROOFING GRANULES

The ANDREWS Portable Conveyor has the versatile abilities to handle a large variety of free flowing uniform granular materials. Also available in permanent models without wheels. With the P-51 attachment (see below, right) its scope is virtually unlimited.

ANDREWS P-51

Portable Overtrack Conveyor

Teams with the ANDREWS Portable and Permanent Tubular Conveyor to perform double-duty at Cement, Ready Mix, Concrete Block and similar plants unloading covered hopper cars. No pit has to be dug under the track with the ANDREWS P-51 eliminating the usual water hazard. A railroad car can be spotted at any point and unloaded at a moments notice.



The P-51 is shown feeding into an ANDREWS Portable Tubular Screw Conveyor.

WRITE NOW! / **For Full Details, Specifications, and All Facts on All Models**

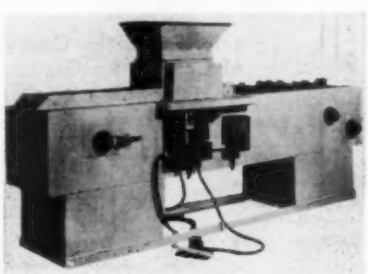
ANDREWS

ANDREWS MACHINE COMPANY

359 E. Main Street Decatur, Illinois

Phone: Decatur 8-4363

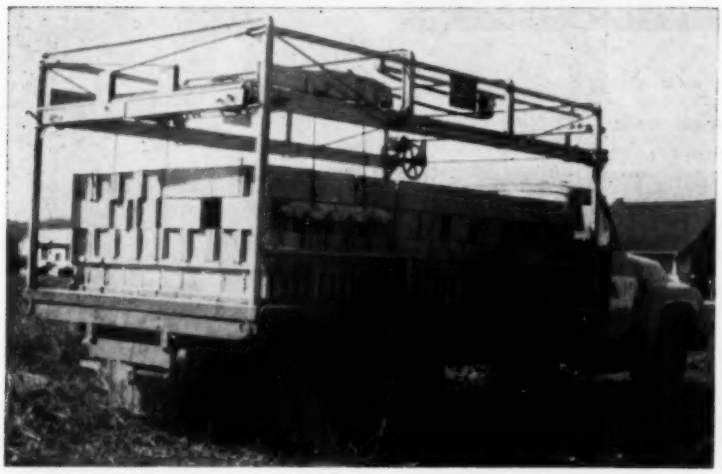
• The Bailey flow transmitter is a new high-head differential meter for measuring the rate of flow of steam at high pressures into autoclaves used in the curing of concrete blocks. The instrument converts a differential pressure to the rate of flow, for improved metering and control practices. Features are low cost, accuracy, rangeability, simplicity, and flexibility. ▲ (106)



• Superior Rooftile Machinery Company has developed a fully-automatic concrete roof-tile machine capable of producing 44 squares of interlocking roofing per day. Both Spanish and French type tile can be produced with the same equipment. The smooth finish produced by the machine precludes painting or spraying after the tile is formed. ▲ (107)

The GUNCO *Patents Pending*

HYDRO-LIFT UNLOADER



The unloader that gives you maximum performance—the proved ability to perform steadily, dependably, with maximum production and minimum maintenance. You can pay a great deal more, but you simply cannot buy a better Unloader than the GUNCO Hydro-Lift.

THE MODERN WAY TO DELIVER BLOCKS

Profits Up!

. . . with the

GUNCO

HYDRO-LIFT UNLOADER

Costs Down!

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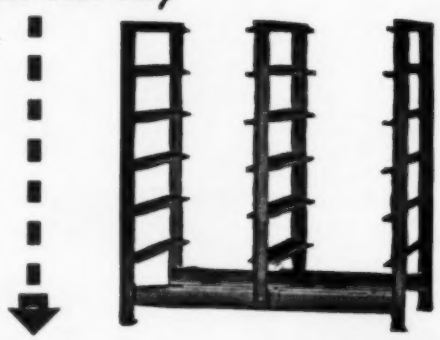
G. & H. MACHINE CO., P.O. Box 38, Columbia, Pa. • Phone Columbia 4-2352, 4-4711

THE ORIGINATORS & MANUFACTURERS OF THE GUNCO HYDRO-LIFT UNLOADER

CHASE BLOCK RACKS, PLAIN STEEL PALLETS

Your best buy



Here's why • • • Standard style or specially designed, Chase racks meet your requirements. They're shipped painted and knocked down—assembly is easy—no special tools or welding needed. Chase experience means low prices and years of dependable service. Check Chase prices.

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Dur-O-waL preserves beauty, adds structural soundness and prevents cracking.

Trussed Design

Butt Weld • Deformed Rods

DUR-O-WAL®

Phone, wire or write Dept. 2S today for complete dealer information . . . . you have a market for Dur-O-waL in your town. Act now.

Dur-O-waL Div., Cedar Rapids Block Co., CEDAR RAPIDS, IA. Dur-O-waL Prod., Inc., Box 628, SYRACUSE, N.Y. Dur-O-waL of Ill., 119 N. River St., AURORA, ILL. Dur-O-waL Prod. of Ala., Inc., Box 5446, BIRMINGHAM, ALA. Dur-O-waL Prod., Inc., 4500 E. Lombard St., BALTIMORE, MD. Dur-O-waL Div., Frontier Mfg. Co., Box 49, PHOENIX, ARIZ. Dur-O-waL, Inc., 165 Utah St., TOLEDO, OHIO

Quality Guaranteed

MASONRY REINFORCING

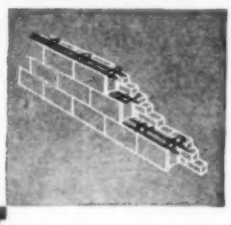
FOR SOLID WALLS

ECONO-LOK* . . .

Specifically designed for brick walls with concrete masonry back-up.

- Prevents moisture conducting brick header courses (Complies with ASA requirements for metal bonders.)
- Ties inner wythe to outer wythe
- Reinforces concrete masonry
- Permits flexibility of design
- Packaged for identification and protection

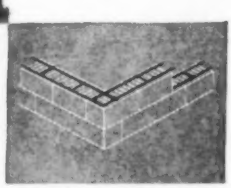
Made in 12-ft. lengths from all #9 ga. or all 3/16" high tensile steel wire with U-Ties flush welded 16" center to center.



BLOK-LOK . . .

Flush welded at cross ties for greater strength.

- Small masonry joint
- Maximum structural strength (tension tested by Columbia University)
- No obstruction to mechanical trades
- Minimum job breakage
- Packaged for identification and protection



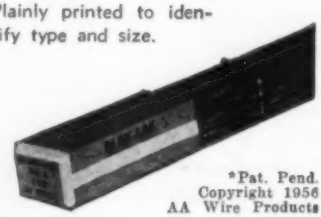
Available in 10-ft or 12-ft. lengths; in various gauges and finishes.

FAMOUS FLUSH WELD

Designed and tested to required standards. Extensive testing laboratory reports serve to confirm the sound engineering of BLOK-LOK's design.

BUNDLE WRAPPERS

Plainly printed to identify type and size.



*Pat. Pend.
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AA Wire Products

AA WIRE PRODUCTS COMPANY

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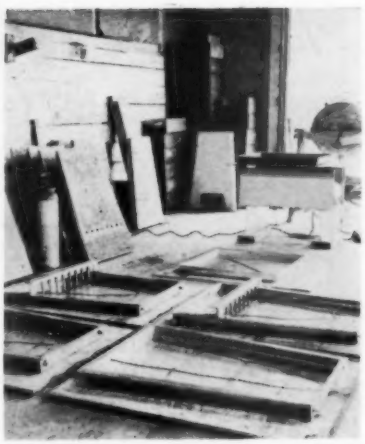
Phone: RAdcliffe 3-8313

WORLD'S FOREMOST PRODUCER OF MASONRY REINFORCING

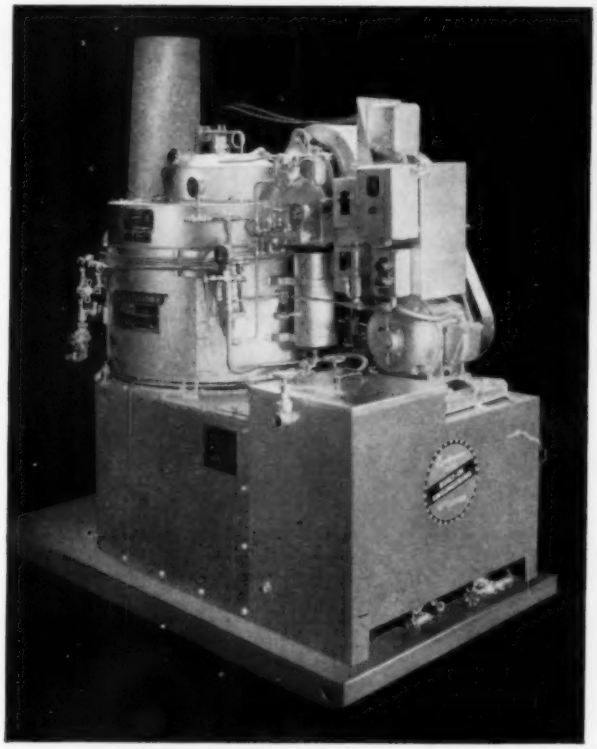


• Cadmium-plated, rust-proof molds for producing a combination barbecue and incinerator unit are available from the R. L. Spillman Company. The pan-type units produce interlocking corners that are secured on the site by #9 wire cast in the heat-resisting concrete. The base mold is designed to produce a self-centering casting which facilitates assembling. The finish may be white, or a colored finish may be obtained by brushing color into it. **(108)**

• Coles Cranes Inc., manufacturer of industrial materials handling equipment, has announced the availability of L.P. gas as original equipment for all models of its mobile crane. Models S-410, S-810, and S-1210, ranging from 4 to 12 tons, feature the new propane-butane operation. Lower fuel costs and reduced maintenance are advantages of the L.P. fuel powered cranes. The mobile cranes are adaptable for handling products in prestressed concrete casting beds. **(109)**

Ronald W. Erickson has been appointed a sales representative in the Springfield, Ill., area for the Poston Brick and Concrete Products Company by E. V. Poston, president of the firm.

NEW MODEL 900 KWIK-STEAM GENERATOR!



- ★ 35 boiler hp at the touch of a switch
- ★ Completely automatic operation . . . burner cuts in and out as required
- ★ No steam explosion risk . . . approved safety controls
- ★ Small, compact, 80% efficiency

Low cost—produces 225 psi steam at 80% efficiency as you need it . . . when you need it. Ideal for producing winter ready mix concrete and curing concrete products. For complete information, send for bulletin 22. Littleford Bros., Inc., dept. LB 206, 403 E. Pearl St., Cincinnati 2, Ohio.

LB LITTLEFORD

BLACK TOP ROAD EQUIPMENT SINCE — 1902

HIGH Output • Quality • Profits

in Septic Tanks built with

CARPENTER EQUIPMENT

Concrete producers from coast to coast are getting maximum profits from CARPENTER Forms and Equipment. This method insures top speed and economy in all operations, and premium units in demand everywhere. One MAN handles our delivery rig.

Write for full details

CARPENTER MANUFACTURING CO.

Harvie Road • Carrier 94 • Box 470 • Phone 2-8938 • Richmond 23, Va.

K & R AIR POWERED CUTTERS

Speed up Production

Reduce cutting costs 50%

Cut Pipe Mesh, Re-Bars, Rods & Bolts.

High Speed, Light Weight, Portable

5/16" to 9/16" Head Capacity

Price range $140 to $200.

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K&R AIR POWERED EQUIPMENT CO.

CANTON, SOUTH DAKOTA

CINDERS

Carload Shipments

Large Dependable Source of Supply

Uniform in color • Free of staining causes
Low in combustible matter • Consistent sizings

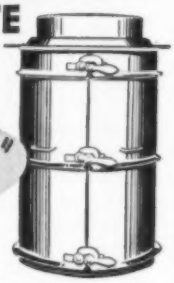
CLEANED SCREENED CRUSHED

(Half inch down to powder)

Steady shipping schedules
Mention railroad delivery

CINDER SHIPPERS, Box 495, Chester, Pa.

CALL ON Quinn For QUALITY CONCRETE PIPE FORMS



"STANDARD" The World Over

Backed by over 45 years of reliable service, the QUINN Heavy Duty form is recognized as the STANDARD design and the finest concrete pipe form everywhere. Used in making pipe by vibration, spading or tamping. Sizes for pipe from 10" to 120" and larger. Tongue and groove (as shown) or bell end pipe in any length desired. If your pipe orders specify extra large sizes, odd shapes or unusual lengths, there's a Quinn form made to produce the finest pipe at lowest possible cost.

Also Manufacturers of
QUINN CONCRETE PIPE MACHINES

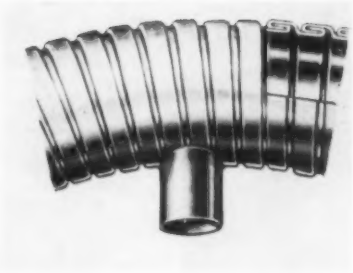
Free CATALOG

Illustrates our complete line of equipment. Contains pages of valuable tips for the concrete pipe manufacturer. Write today for your free copy and estimates.

Quinn WIRE & IRON WORKS
BOONE, IOWA

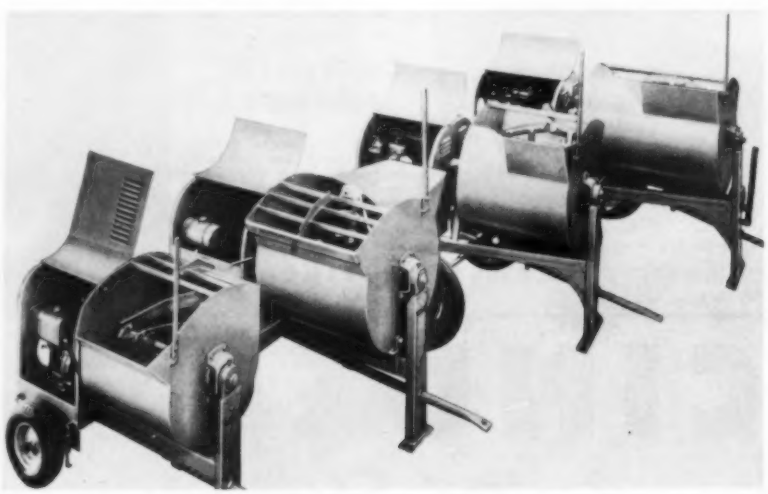
Drive and live on the safe side of the road!

BE CAREFUL . . . the life you save may be your own!



• To facilitate grouting operations, the Universal Metal Hose Company is now offering grouting inlets as a convenient accessory on its Steelflex-U-100BX armoring casing which is used for armoring cable or wire reinforcing in post-tensioned, prestressed concrete. ← (110)

• This new drop frame trailer, manufactured by the Fruehauf Trailer Company, is 37 ft. 6 in. long, and can haul 74,400 lb. gross weight. The trailer has a 14-in. drop in order to handle large size concrete pipe sections such as the above, which weigh 11½ tons each, have an inside diameter of 9 ft. 6 in., and a section length of 100 in. ↑ (111)



• Four representative models of the 21 different plaster and mortar mixers comprising the Essick Manufacturing Company's redesigned line are pictured above in the basic sizes of 4-, 6-, 8-, and 12-cu. ft. batch capacities. All the new Essick mixers feature added horsepower, faster spiral mixing action, no greasing, improved shaft seals, easily accessible engine houses, bag splitters, safe portability, heavy duty clutch, low charging heights, and rubber scraper blades. The 8- and 12-cu. ft. mixers have a totally enclosed automotive type transmission and clutch directly coupled to the engine or motor, with all gears machine cut and running in oil. For contractors whose jobs require an indoor mixing operation, there are Essick electric-powered models which permit the mixer shells to be telescoped in to pass through the doorways and then returned to the wide safe highway travel width. ↑ (112)

SIDE-O-MATIC

Progressive Meekins, Inc. of Florida now have 2 Side-O-Matics in their fleet.

Meekins, Inc. are both quality- and service-minded.

PARTIAL LIST OF SATISFIED USERS:

Best Block Company
Jacksonville, Florida—2 units

Alico Concrete Products Co., Inc.
Patchogue, L. I., New York

City Cement Blocks Co.
Bridgeport, Connecticut—3 units

The Ideal Builders Supply and Fuel Co.
Cleveland, Ohio—2 units

Apex Coal and Supply Co.
Cleveland, Ohio

Binkley and Ober, Inc.
East Petersburg, Pa.—2 units

The Michigan Silo Company
Peoria, Illinois—2 units

Joseph M. Ripley, Inc.
Jacksonville, Florida

M. L. Dague Company
Muncie, Indiana

R. I. Lampus Company
Springdale, Pennsylvania

Pick's Pack-Hauler
Blue Hill, Nebraska

Schenectady Cast Stone Co., Inc.
Schenectady, New York

Raymond W. Bartlett
West Creek, New Jersey

Concrete Masonry Corporation
Elyria, Ohio—4 units

Fizzano Brothers, Inc.
Crum Lynne, Pennsylvania

Maule Industries, Inc.
Miami, Florida—2 units

South Hammond Concrete Products Co.
Hammond, Indiana

Peoria Concrete Construction Company
Peoria, Illinois

Bestone Incorporated
Chardon, Ohio

Flower City Builders Supply Corp.
Rochester, New York

Nitterhouse Concrete Products
Chambersburg, Pennsylvania

Marquart Concrete Block Company
Waterloo, Iowa

The Plasticrete Corporation
New Haven, Connecticut—2 units

The Cleveland Builders Supply Co.
Cleveland, Ohio

Putnam Mason Supplies, Inc.
Carmel, New York

Tait Block and Supply Company
Port Huron, Michigan

Columbia Concrete Products Co.
Des Moines, Iowa

Park Avenue Cement Block Co., Inc.
Cranston, Rhode Island

Adolf Jandris and Sons, Inc.
Gardner, Massachusetts

Daggett's Concrete Products
South Haven, Michigan

Fairlawn Supply and Coal Company
Akron, Ohio

Polyock Brothers
Zenda, Wisconsin

Atlas Concrete Products, Inc.
Flint, Michigan—2 units

Allen County Concrete Products
Lima, Ohio

Meekins, Inc.
Hollywood, Florida—2 units

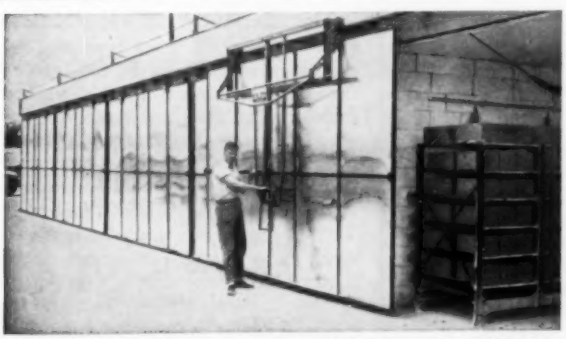
Carl Krebs
Fort Thomas, Kentucky

New Castle Duntile Company
New Castle, Pennsylvania

Iowa Concrete Block & Material Co.
Des Moines, Iowa

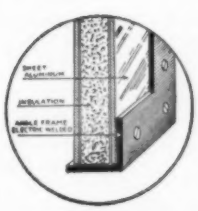
SIDE-O-MATIC UNLOADER CORPORATION

P. O. Box 1561, York, Pa. • Phone York 7357



Moore Carrier-type Doors at Albany (Ga.) Concrete Prod. Co.

Moore Metal-Insulated Kiln Doors Save Fuel—Reduce Curing Time



Keep heat where it belongs — inside the kiln — with Moore Aluminum-Insulated Doors. They improve curing conditions — save steam — last longer.

Send us dimensions of present door openings for quotation.

MOORE DRY KILN COMPANY

Oldest and Largest Manufacturers of Dry Kilns and Veneer Dryers

JACKSONVILLE FLORIDA · BRAMPTON, ONT. CANADA · VANCOUVER, B. C. CANADA · NORTH PORTLAND OREGON

EDMONT CASE NO. 564: Ordinary plastic gloves used for stacking cinder block gave a maximum of 4 shifts' wear. Edmont No. 31 triple-thick palm gloves averaged 10 shifts.

Outwear ordinary plastic 2½ times

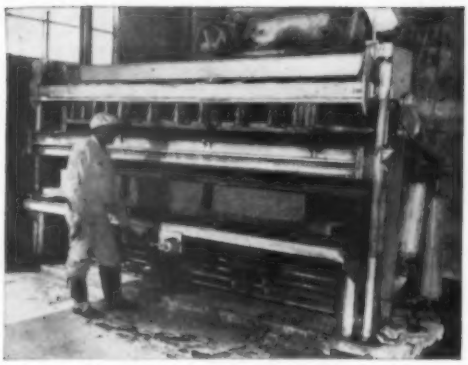
No. 31 triple-thick palm

The case above is typical of the experience of hundreds of concrete products plants with Edmont No. 31 Monkey-Grip gloves. These *job-fitted* gloves have a *triple-thick* palm coating of special vinyl plastic that resists abrasion and snagging better than any other work glove made. Edmont also makes non-slip rubber coated gloves job-fitted for handling bagged cement.

Free Test Offer To Listed Firms: Tell us your operation and materials handled. Without cost, we will send you recommended gloves for on-the-job testing.

Edmont JOB-FITTED GLOVES

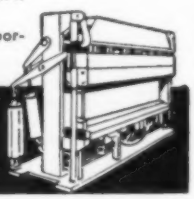
Edmont Manufacturing Company
1208 Walnut Street, Coshocton, Ohio
In Canada write MSA, Toronto



PreCaster in operation at Reading Concrete Products Inc. Reading, Ohio

1000′ of lintels daily

- Reading Concrete Products says that a few years ago they hesitated to take orders for precast items like lintels, fence posts, highway guard rail posts etc., as their production by hand methods was very limited and their costs high.
- All this has been changed by their *PreCaster*. They now produce those items on a production basis with cost comparable to other concrete items they manufacture. They produce lintels on the *PreCaster* at a rate of 800 to 1000 feet per day . . . color and texture comparing favorably to their block.
- They write: "now you can realize why we consider our PreCaster purchase a very wise investment.
- Write today for PreCaster's new catalog detailing seven profit opportunities. PreCaster Inc., 5217 Beech Street, Cincinnati 17, Ohio.



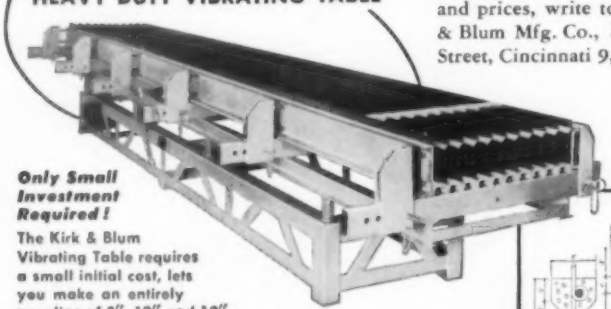
PRECASTER

Add a New Profit-Maker

increase your volume

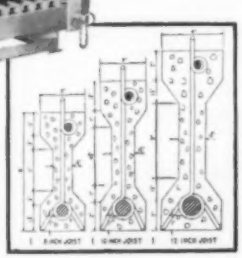
PRODUCE CONCRETE JOISTS, LINTELS AND FENCE POSTS with the KIRK & BLUM HEAVY DUTY VIBRATING TABLE

Your experience in the building trade should make it easy to build up a profitable business in this new line. The products are simple to make, have unusual strength, are termite proof. The KIRK & BLUM Type "S" Heavy Duty Vibrating Table is capable of multi-production of concrete joists, allowing a fine profit-margin. Easily produced by unskilled operators. For complete details and prices, write to The Kirk & Blum Mfg. Co., 3112 Forrer Street, Cincinnati 9, Ohio.



Only Small Investment Required!

The Kirk & Blum Vibrating Table requires a small initial cost, lets you make an entirely new line of 8", 10" and 12" joists in 20 and 24 ft. lengths.



KIRK & BLUM

Manufacturers of steel forms of all types . . . Curb, Gutter, Sewer, Road

New Literature

Rapid-Flo, a waterproofing product manufactured by the *Lambert Corporation,* is the topic of a booklet available on request. Rapid-Flo gives closer bond in prestressing operations, and is suitable for all molding purposes. Curing time is reduced because of lowered water content. **(113)**

A 128-page catalog, just released by *Soiltest, Inc.,* contains descriptions and illustrations of over 1,350 pieces of testing equipment. The concrete section covers a variety of apparatus for compression and flexure testing, slump, mixing, molding, flow, vibrating, air entrainment, volumetric measurements, curing, and cement testing. **(114)**

Alox 436, an additive for compounding highly effective concrete from oils which can be applied to the mold by brushing or spraying, is presented in a product bulletin offered by the manufacturer, *the Alox Corporation.* Alox 436 is used to prevent sticking of concrete to the metal forms in the manufacture of concrete pipe or other cast objects. **(115)**

The Economy Transit Mixer Drive, designed to eliminate the additional engine usually required to drive the mixer drum, is described in a booklet available from the *Pacific Western Manufacturing and Engineering Company.* The mixer drum is driven from the engine of the truck upon which it is mounted. The Economy Drive can be installed easily on any of the standard model mixer trucks now on the market. **(116)**

Quick opening doors, manufactured by the *Struthers Wells Corporation,* are described and illustrated in a bulletin presenting advantages and applications. The doors may be installed in autoclaves for the curing of concrete to provide automatic opening and closing. **(117)**

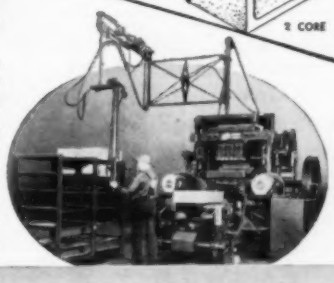
A study of New Jersey mineral deposits, prepared by William Lodding, bureau associate research specialist, Rutgers University Bureau of Mineral Research, points out that the manufacture of lightweight aggregates is one of the fastest growing industries in the United States. The report contains maps showing the locations of these deposits and provides information on their mineral composition. It presents the results of hundreds of sintering and expanding tests. **(118)**

Concrete Filler Block for *Fire-Safe* FLOORS and ROOFS

Why make only the walls of a new building fire-safe and permanent? Why not also apply these practical advantages to the floors and roofs? Concrete Filler Block, produced on a Besser Vibrapac, make it possible for the ENTIRE structure to be fire-safe and permanent . . . at LOW COST.

ALL made on a BESSER VIBRAPAC

Concrete Filler Block are made on a Besser Vibrapac . . . the same dependable machine that produces high quality concrete load bearing block for walls. And the same Plain Pallets are used. All types of filler block can be made in various sizes to coordinate with other modular materials and for all load conditions. Block plant operators can materially add to their profits by supplying their customers with BOTH wall and floor units. For further facts, contact your nearby Besser representative, or write:



Vibrapacs are versatile. They make ALL types and sizes of block on ONE set of Plain Pallets. Fully automatic. Off-bearer removes finished block with power hoist. No manual lifting.

BESSER COMPANY • Complete Equipment for Concrete Block Plants • Alpena, Michigan, U. S. A.

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BLOCK PLANT
(Complete Unit)

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Block building 60 by 90 foot, including Steam Curing Room. 5 lots, 50 foot by 140 foot.

Located at 946 East Villard Street
Dickinson N. Dak.
Known as Dickinson Concrete Products

Write or call:

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Go-Corp Senior 3-block machine. Plain pallet, with 16" and 18" length molds; Extras; Machine kept in excellent repair; Priced very reasonably.

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Established 1885

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CHIEF ENGINEER—to supervise all engineering and development of concrete products manufacturer's building of block machines, mixers, skip hoists, and joist machines, etc., sold world-wide. Must have degree in engineering and be between 35 and 55 years old. Experience need not be in our field but should have embraced farm or heavy machinery.

Write stating education, experience, present employment, personal data, and salary expected. Replies confidential. Address:

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WANTED
USED
FIREBRICK EQUIPMENT

1 Large auger machine
1 Small dry pan
1 No. 2 or No. 3 Clearfield mixer
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Bucket elevators, Vibrating conveyors, Belt conveyors, Hoppers, Feeders, Bins and Silos. Contact:

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4", 6", 8", 12" chimney block attachments.
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Dunbrik Machine complete with No. 10 Mixer System, 2200 pallets, 9 carts, lift jack, and Dunstone attachments. Excellent condition, and priced to sell.

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Must be the current counterpart of the legendary mousetrap maker. Only this guy makes better wings, trowlers, longbottoms, casings and about every conceivable replacement part for every type of concrete pipe making machine.

Like the mousetrap, his parts must be better than any similar parts ever made. Pipe makers from Michigan to Mexico are literally beating a path to his door. He makes immediate off-the-shelf deliveries around the clock.

Just got out a new catalog—looks like a miniature Roebucker. You should have a copy. You pay nothing for his products unless he saves you money. Write for a copy now—the guy must have something better.

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BRIKCRETE Machine complete. Racks, pallets, mixer & skip hoist, etc.

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4", 6", 8", 12" and 2 types chimney block and brick attachments. New 8" and 12" cores never been used. Brick and 6" attachments used very little.

2,000 18x18 pallets

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unbreakable
PALLET RINGS
Write for full information
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1—L-2 Lith-I-Block machine with 6" attachment
1—30 Cu. Ft. Gatzke Mixer complete with 20 H.P. Motor
1—30 Cu. Ft. Lith-I-Skip—Inclined Type
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1—Automatic Side Pallet Return
40—72-Block Steel Racks
1440—¼" x 18" x 22" Steel Pallets
2—Mold Box Shells

This equipment being replaced by H-310 3-block hydraulic Lith-I-Block Machine.

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Financing can be arranged.

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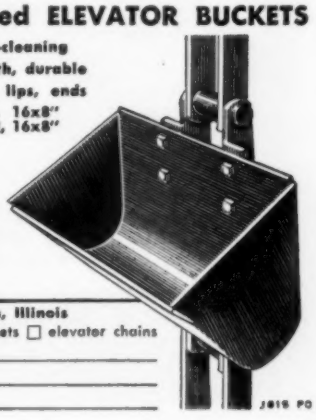

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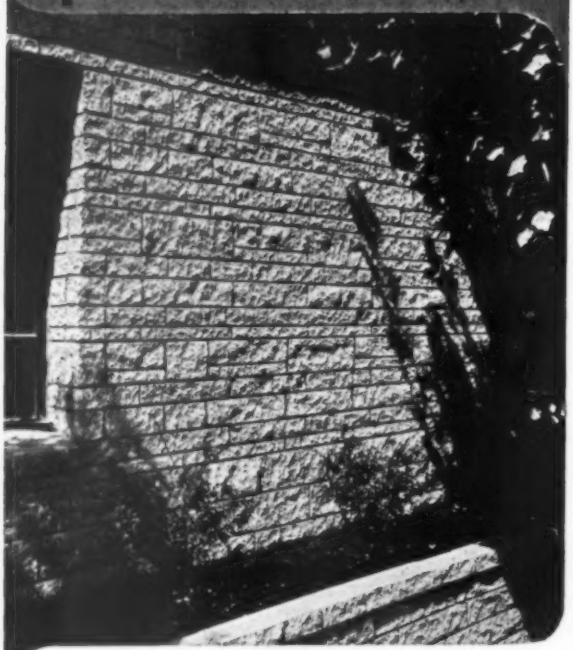
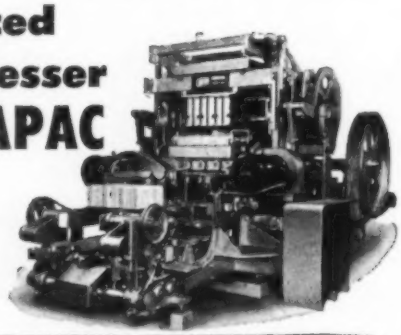
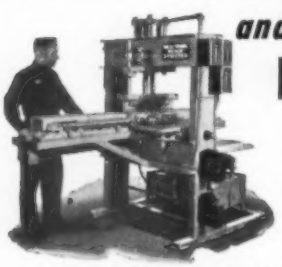


made from Block produced on a Besser VIBRAPAC





and Split on a BES-STONE Block Splitter

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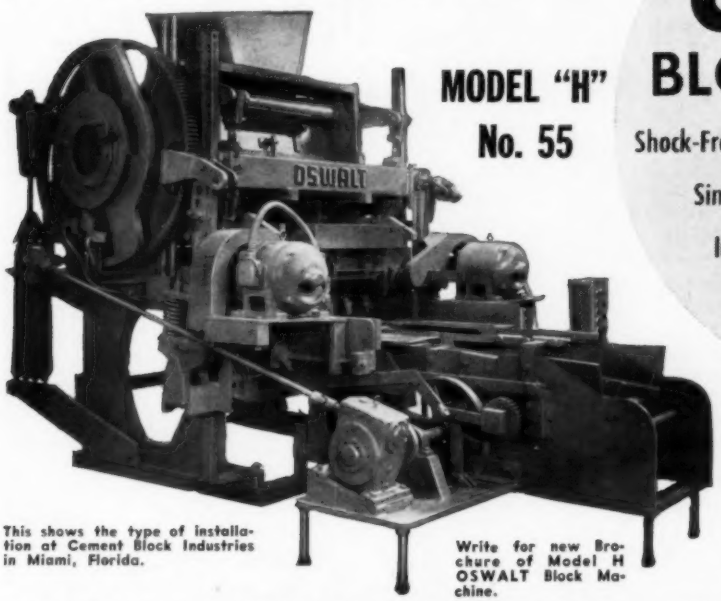

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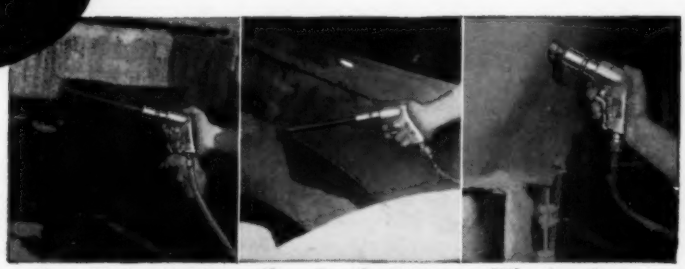

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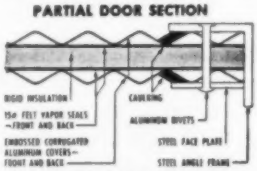
Above: Universal Kiln Doors, Door Carrier Equipment, and Sliding Utility Doors at Cinder Block & Material Co., Indianapolis, Ind.

PARTIAL DOOR SECTION



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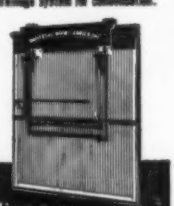

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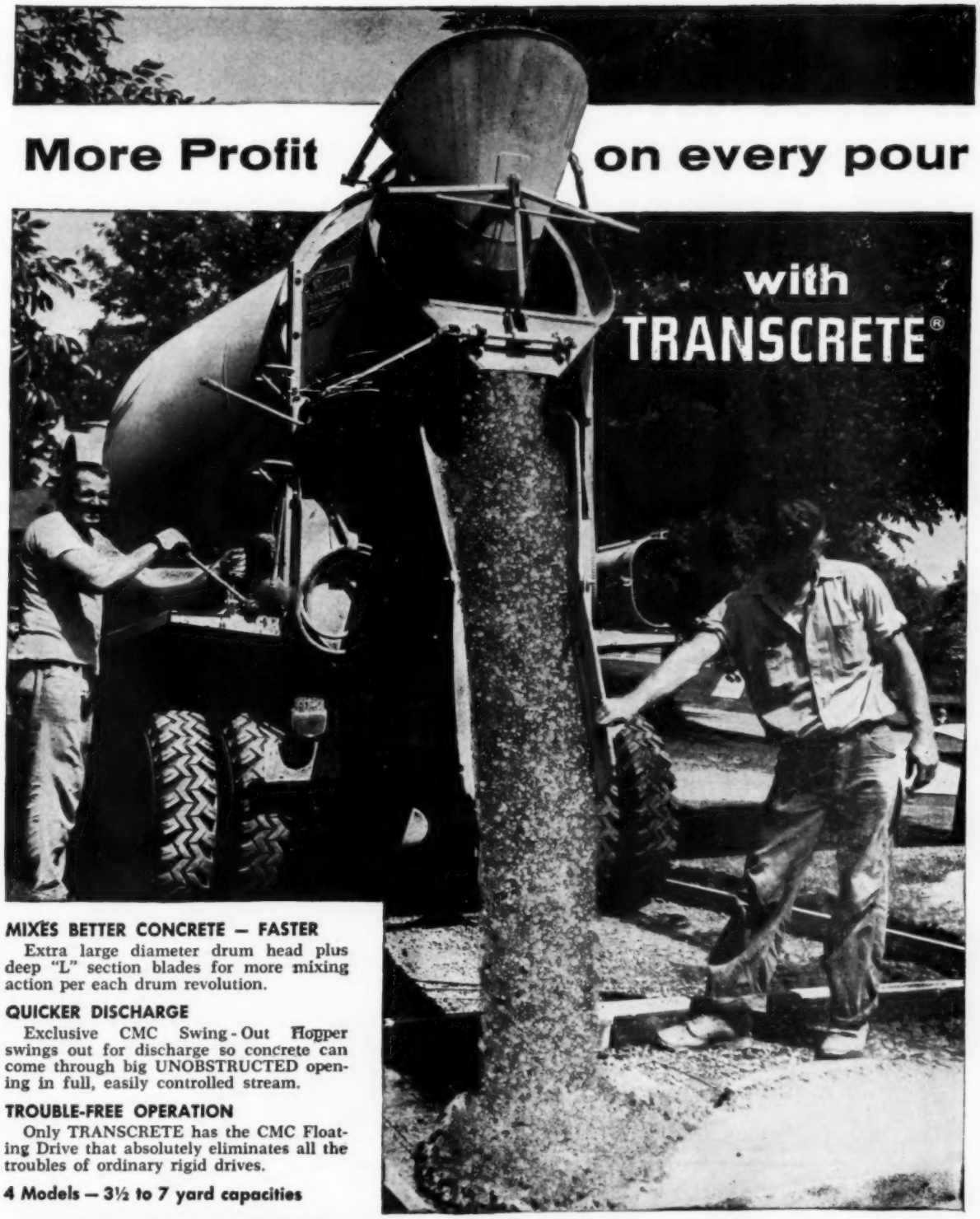

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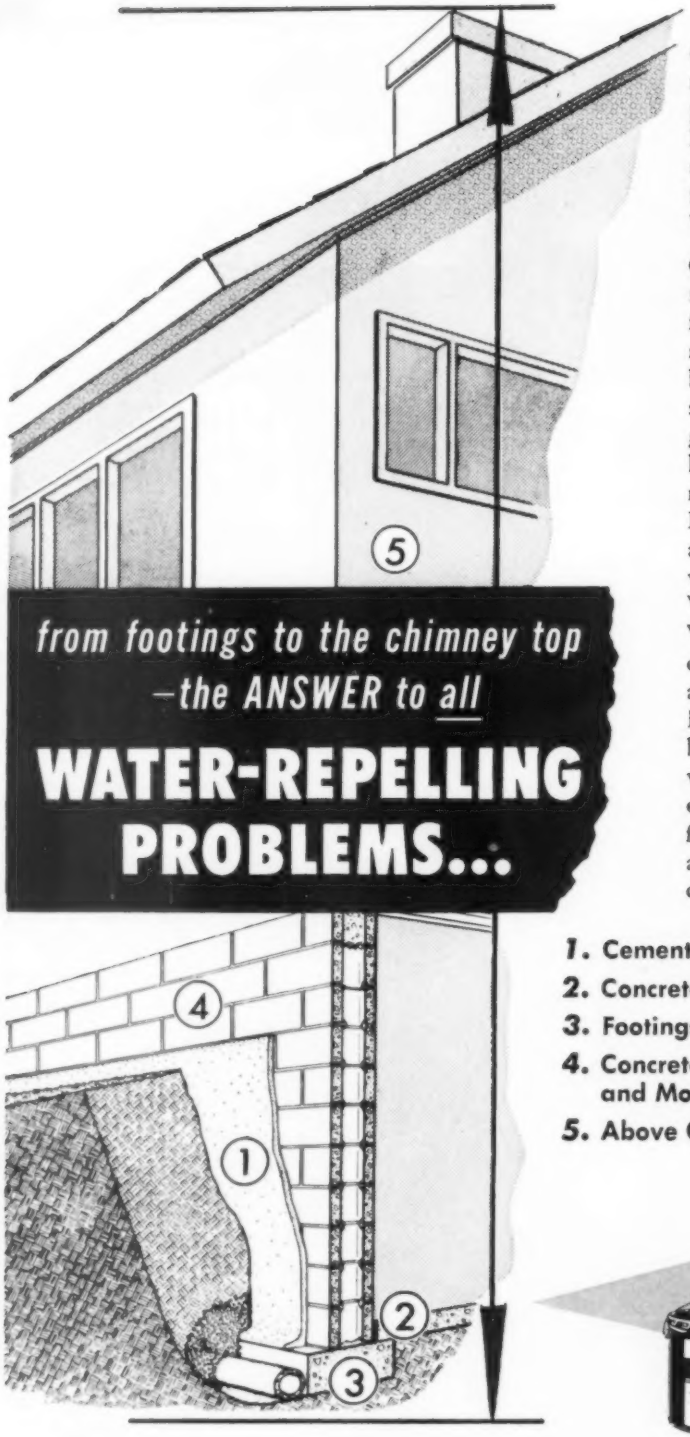

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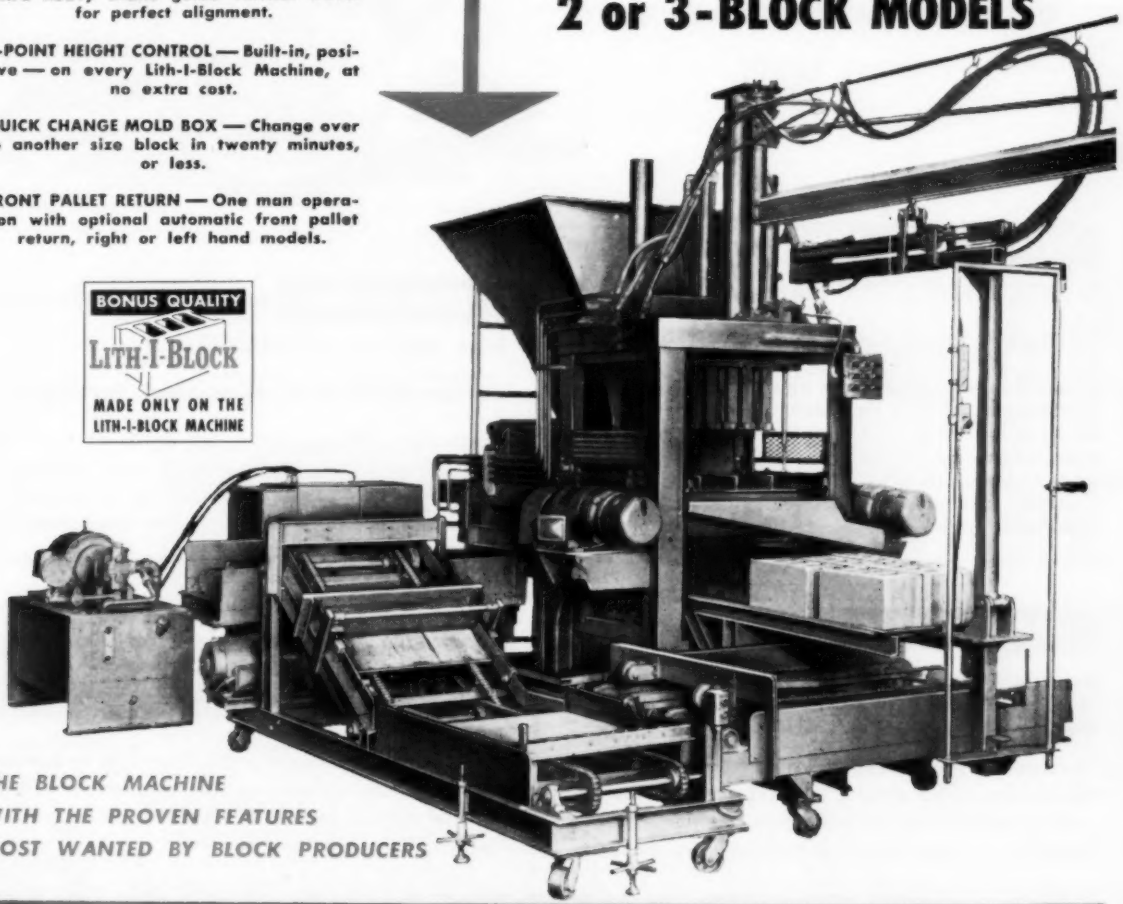

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Box 97 Crosby, Minnesota Phone 500

PRODUCTION SUPT. WANTED

A new industry in central New York is seeking the services of a production minded man to take charge of a maintenance department. Such a man should be familiar with conveying machinery and heavy machinery in general and be capable of planning work for and directing a small group of men. This position is as big as any capable man can make it. Salary and age limits open. Write

BOX PQ-8042, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED LIME ENGINEERS

Well known manufacturer of building materials has excellent opportunity for graduate engineers with experience in lime manufacturing for an engineering position in its Chicago home office. In replying please state age, education, experience, and salary requirement.

PQ-7092, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago, Ill.

WANTED

Ready-mix Concrete Superintendent

Progressive firm operating three concrete plants and 35 mixer trucks in Southern city wants man between 25 and 35 years of age to handle operations of ready-mix business. Send full data on past employment, with position held, pay and reasons for leaving. All inquiries are strictly confidential. Write to:

BOX PQ-8032, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED

30" Gyratory Crusher
42" Gyratory Crusher
THE NATIONAL LIME & STONE CO.
Findlay, Ohio

FOR SALE OR LEASE

2 Quarry sites. One in South Carolina. The other in Georgia. Both are in heavy populated areas of Piedmont Section. Plenty of water and electricity available. Contact:

JOHN B. SMITH
Athens, Ga.

FOR SALE BY OWNER

3 Hammermills—24" x 24", Eagle Crusher Co.
2 Locomotives—8 and 12 ton, 36" gauge Plymouth, Gasoline
22 Cars—2 yard capacity, 36" guage, Atlas Car and Manufacturing Company
1 Screen—3' x 8' single deck, W. S. Tyler dewatering
6 Pumps—3" Bingham Pump Company—Service liquid flotation feed 35' head, 475 G.P.M.
16 Pumps—4" Bingham Pump Company—Service liquid flotation feed 55' head, 290 G.P.M.
6 Flotation Cells—Morse-Welning type. Size 42" x 42" x 48"

For further information contact J. H. Clements.

BASIC, INCORPORATED
Maple Grove, Ohio
Post Office, Fostoria, Ohio

WANTED TO PURCHASE

3 TO 5 MILES OF BELT CONVEYOR

Minimum 30" wide, in good condition.

Please submit detailed reply to

BOX PQ-8062
c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St.
Chicago 5, Ill.

WANTED

Assistant to General Manager of large gravel operation to relocate in southern state. Must have thorough knowledge of dredge and strip mining operations and equipment. Must be capable of assuming duties as General Manager in short time. Very attractive offer to qualified man. Give all qualifications, pertinent facts and salary desired in first reply.

BOX PQ-8052, c/o PIT & QUARRY PUBLICATIONS
431 S. Dearborn St. Chicago 5, Ill.

WANTED

SALES ENGINEER FOR CRAWLER TYPE TRACTOR AND LOADING EQUIPMENT. EXCELLENT OPPORTUNITY FOR AGGRESSIVE AND EXPERIENCED SALES PERSON. PROGRESSIVE AND GROWING MANUFACTURING ORGANIZATION.

THE EIMCO CORPORATION
3140 Fayette Avenue
Birmingham 8, Ala.

PRIMARY ROCK CRUSHER FOR SALE

1 - Pioneer 30x42 jaw crusher, with 14'x42" apron feeder, and 14'x42" discharge feeder. Powered by a Caterpillar D-13000 power unit, all mounted on Pioneer truck frame with Athey tracks.

HECTOR CONSTRUCTION COMPANY
5133 Halifax Ave. - Minneapolis, Minn.
Phone: WAlnut 2-6244

TANDEM DRIVE TRUCKS

1955 International RF195 air brake tractors. 450" motors, Roadranger transmissions, 1000/20 tires. Ideal dumps, concrete mixers. Immediately available in quantities of 40.

BERMAN SALES COMPANY
High & Berks Sts. Pottstown, Penna.
Phone 2400
Allentown HE 3-5266 Pennsburg 521

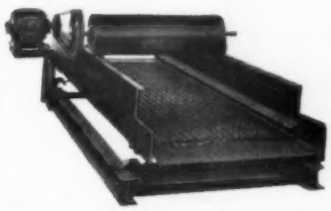
BONDED EQUIPMENT BARGAINS

IMMEDIATE SHIPMENT FROM OUR FACTORY — WRITE, WIRE OR PHONE

NEW BONDED® HEAVY DUTY VIBRATING SCREENS

Model Number	Screening Area	No. of Decks	Sale Price
124AS	2' x 4'	1	$ 443
224AS	2' x 4'	2	472
126AS	2' x 6'	1	472
226AS	2' x 6'	2	501
136AS	3' x 6'	1	581
236AS	3' x 6'	2	688
336AS	3' x 6'	3	956
138AS	3' x 8'	1	675
238AS	3' x 8'	2	815
338AS	3' x 8'	3	996
138BS	3' x 8'	1	1231
238BS	3' x 8'	2	1282
338BS	3' x 8'	3	1375
248BS	4' x 8'	2	1865
348BS	4' x 8'	3	2035
2410BS	4' x 10'	2	1953
3410BS	4' x 10'	3	2305
3412BS	4' x 12'	3	2635

NEW BONDED® GENERAL DUTY VIBRATING SCREENS



For mineral, chemical and other industrial products. Fast, efficient and economical for cleaning, sizing, grading, dewatering. Made in all metals including stainless steel. Enclosed models for hot materials or dust control. Bonded screens are built for any screening operation, wet or dry. HEAVY DUTY MODELS, TYPE BS: 4-bearing positive throw, eccentric shaft; 3' x 8' to 5' x 14', 1 to 5 decks. GENERAL DUTY SCREENS, TYPE AS: eccentric weight mechanism, spring mounted, 1 to 3 decks, 2' x 4' to 3' x 8'. Write for new 8-page Bulletins 1086 and 1087.

NEW BONDED® TROUGHING IDLER CONVEYOR BARGAINS

Complete Ready-Fab sections quickly and easily joined together on the job. We take our loss on our stock of short length belting. You can save as much as 50% on the BONDED CONVEYOR SPECIALS listed, with conveyor belting in two pieces. Conveyors are equipped with 5" roll diam. idlers and return rolls, 20" diam. head pulley and 16" diam. tail pulley mounted on 2¼" or 2-7/16" diam. shaft. Belt is new 4-ply, 28-oz. duck, ⅛" top rubber cover x 1/32" bottom cover and is fresh stock made by leading manufacturers.

Remember, You Save Up To 50%

CONVEYOR PRICES INCLUDE BELTING

Belt Width	Length of Conveyor	List Price	Sale Price
14"	25'	$1397	$ 722
14"	50'	2222	1144
14"	85'	3377	1733
16"	20'	1262	636
16"	45'	2137	1088
16"	60'	2662	1359
16"	90'	3712	1900
18"	25'	1477	794
18"	45'	2217	1166
18"	70'	3142	1648
18"	85'	3697	1933
18"	100'	4252	2220
18"	130'	5362	2797
20"	25'	1517	828
20"	60'	2882	1533
20"	75'	3467	1838
20"	90'	4052	2145
24"	25'	1590	898
24"	45'	2430	1330
24"	70'	3480	1875
24"	100'	4740	2514
24"	120'	5580	2950
24"	150'	6840	3603
30"	50'	2911	1617
30"	70'	3871	2119
30"	90'	4831	2614
36"	25'	1818	1118
36"	45'	2858	1678
36"	60'	3638	2096
36"	100'	5718	3214

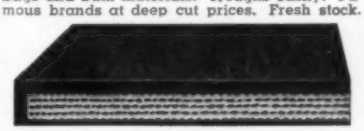
For conveyors longer or shorter than those listed above, add or deduct the following per foot prices according to belt width. Prices include belting.

For 14" belt	$16.84	per foot
For 16" belt	18.04	per foot
For 18" belt	19.24	per foot
For 20" belt	20.37	per foot
For 24" belt	21.78	per foot
For 30" belt	24.75	per foot
For 36" belt	27.95	per foot

Write For Bulletin #1138

NEW CONVEYOR BELTING SAVE UP TO 25%

Heavy duty 4-ply, 28 oz. duck ⅛" top rubber cover by 1/32" bottom cover 12# to 15# average friction pull; 800# to 1000# average cover tensile rubber belting having high tensile strength, tough cotton duck, strong carcass and proper flexibility. For heavy boxes, bags and bulk materials. Troughs easily. Famous brands at deep cut prices. Fresh stock.



Width	List Price	Sale Price
14"	$3.43 foot	$2.75 foot
16"	3.86 foot	2.88 foot
18"	4.27 foot	3.19 foot
20"	4.69 foot	3.69 foot
24"	5.55 foot	4.14 foot
30"	6.77 foot	5.06 foot
36"	8.01 foot	6.00 foot

A high grade of heavy duty 4 and 5-ply, 28 oz. duck, ⅛" top rubber cover x 1/32" bottom rubber cover, 16# to 19# average friction pull, 2500# to 3000# average cover tensile belting or 24# to 33# average friction pull, 1800# to 2300# average cover tensile belting. These belts are for more severe services, high tonnages and abrasion resistance. For handling stone, mineral ores, concrete, cement, coal and other similar materials, both wet and dry. Belt has molded rubber edge.

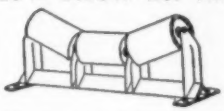
16"	4	$4.59 foot	$3.36 foot
18"	4	5.09 foot	3.72 foot
20"	4	5.57 foot	4.24 foot
24"	4	6.56 foot	4.80 foot
30"	4	8.05 foot	5.89 foot
24"	5	7.68 foot	5.61 foot

Additional widths and plies available at low prices. Write for Free Sample.

NEW BONDED ® FEEDERS

For high tonnage and controlled feed of Aggregate, Sand, Gravel, Crushed Stone, Clay products, Metallic Ores, Coal, Cinders and almost any other bulk material to Crushers, Screens, Conveyors, Mills and other process machinery. Feeder may also be driven from tail shaft of Bonded ® Troughing Idler Conveyors, thus eliminating the necessity of two motors. Capacities to 225 tons per hour. Full information in Bulletin 1140. Write for It.
Priced from $255.00

NEW IDLERS AND RETURN ROLLS 25% BELOW LIST PRICE



3-roll, 5" diameter Troughing Idlers for:			
14" belt	$18.50	24" belt	$21.25
16" belt	19.25	30" belt	22.00
18" belt	20.50	36" belt	22.75
20" belt	20.75	48" belt	25.50

1-roll, 5" diameter Return Idlers for:			
14" belt	$7.25	24" belt	$ 8.50
16" belt	7.50	30" belt	9.50
18" belt	8.00	36" belt	10.00
20" belt	8.25	48" belt	11.50

All steel. Interchangeable with other well-known makes. Furnished with easily replaceable pre-lubricated Sealed ball bearings. Also can be furnished with greasable type Alemite Fitted bearings at slight additional cost. Maintenance is negligible. Bonded Rubber Disc Impact Idlers available from $61.00. Write for bulletin # 1138.

BONDED CONVEYOR ACCESSORIES

All Bonded Troughing Idler Conveyors (described in this ad) can be equipped with any accessory described below or use them on your present conveyor or bucket elevator. Write for Bulletin #1138.

Carrying Belt Guide Idler $14.50

Return Belt Guide Idler $11.75

Wing Pulley $71.50

Holdback $99.00

Self-Aligning Idler $60.75

Head & Tail $149.00

Return Roll $7.25

YOU ARE WELCOME TO VISIT THE BONDED FACTORY ANY TIME

BONDED SCALE AND MACHINE COMPANY

PHONE: Hickory 4-2186 Days; WRITE FOR FREE CATALOG AND PRICES PHONE: AX minster 1-2213, Evenings

110 Bellview **Migrs. of Scales, Conveyors, Conveyor Parts, Idlers, Vibrating Screens, Crushers and Feeders** **Columbus 7, Ohio**

SPECIALS

2—New 6½'x150' kilns
1—#6 Williams Hammermill
1—28" Telsmith Intercone Crusher

KILNS

1—4½'x40' Kiln,

DRYERS

1—4½'x39', 8'125'

CRUSHERS

1—36"x42", 24"x36", 18"x36"
12"x24" Jaw Crushers
2—42"x16" Allis-Chalmers Crushing Rolls
2—24"x14" Rogers Iron Works Crushing Rolls, Rebuilt
1—36"x16" rebuilt Sturtevant Rolls
1—24"x12" Farrell Bacon Crushing Rolls Rebuilt
1—No. 322 & 330 Allis-Chalmers Hydrocones
1—6", 10", 16" and 20" McCully Superior Gyratory Crushers
No. 3 up to 12 Gyratory Crushers

BALL, ROD & TUBE MILLS

6'x12', 5½'x10', 8'x6' Ball Mills
2—5'x16'; 1—5½'x10'; 1—4'x11' Rod Mills
2—5½'x20' and 5'x22', 6'x22' Tube Mills

MISCELLANEOUS

1—14' Air Separator
8'x10', 6'x8', 12'x10' Oliver Filters

We Make New Dryers, Kilns, Dust Collectors

Have you any machinery that you want to sell?

W. P. HEINEKEN, INC.
50 Broad St. New York 4, N. Y.
Phone Whitehall 4-4236

FOR SALE OR RENT

45 ton General Electric Diesel Elec. Loco.
25 ton Ohio Diesel Loco. Crane 1947.
Christian 2D Hoist & Swinger, 138 HP Buda Diesel Engine. 15,000 # SLP.
2 100 HP Lucey Portable Horiz. Fire-Box Boilers. 200 lbs. Oil Fired. ASME.
25 ton American Steel Guy Derrick.
30 ton Steel Stiffleg Derrick 125' bm.
1½ yd. Northwest No. 6 Diesel Crane 1948.
1½ yd. Bucyrus-Erie 38-B Diesel Crane 1948.
5 yd. Manitowoc 4500 Shovel-Dragline.

Mississippi Valley Equipment Co.
513 Locust St. St. Louis 1, Mo.

Locomotive Cranes, Used—For Sale

1—30T Industrial Brownhoist Diesel—1942
1—30T Browning Diesel—1943
1—25T Inustrial Steam, Erection, 85' boom

Overhead Crane, Used—For Sale

1—20T, 39' Span, P&H—440 AC

George M. Meriwether, Industrial Equipment
1712 7th Avenue North Birmingham 4, Ala.

LOCOMOTIVES

We own and offer
Subject to prior sale
2—80 ton WHITCOMB diesel electric, 650 HP, new 1944
2—45 ton PORTER diesel electric, 300 HP, new 1942
Full data and prices on request.
May be inspected in operation

PAN AMERICAN ENGINEERING COMPANY
P. O. Box 1709 • Tel. LOgan 8656
Dallas, Texas

SHOVELS & DRAGLINES
For Sale or For Lease

1055, P & H, combination shovel and dragline, serial #14178, new 1951, equipped with shovel attachment and 120' dragline boom, fairleads and lagging. No dragline bucket, caterpillar engine. Shows little wear and is in good operating condition. Price, F.O.B., Los Angeles $55,000

1055, P & H, dragline, new 1950, serial #12262. In Colorado, approximately 125 miles West of Denver on a coat stripping operation. Has been idle for almost a year. Is equipped with 120' boom and fairleads, 3 & 5 yd. dragline buckets. Buda diesel engine. Price includes a substantial quantity of new Buda engine parts. Located in Los Angeles. Not been overhauled but is in good workwise condition. F.O.B., Price, Colorado ...$34,500

2 model 1201 Lima draglines, with one shovel attachment which will fit either machine. These machines, serial #5209, and #5338, are located in Los Angeles. Good condition. Prices $46,500
$48,000

Extra for shovel attachment .....$ 7,000

Northwest 80 diesel shovel, new in 1948. In good operating condition here in Los Angeles. Price $26,500

54 B, Bucyrus Erie, serial #13188. New 1945. Shows little wear. Priced for immediate sale at Richmond, Calif. $34,500

Osgood model 800, 1¼ yd. shovel. Serial #3205, powered by caterpillar D. 13,000 engine. Has not been overhauled but in good operating condition. Price, F.O.B., Oro Grande, Calif. $11,500

1½ yd. dragline attachment for the above Osgood shovel $2,500

NELSON EQUIPMENT CO.
430 S. Fuller Ave. Los Angeles 36, Calif.

FOR SALE

1953 Murphy Diesel Generator Model 122
127 KW-240 Volts—60 cycle
Excellent Condition
Price f.o.b. Medford, Mass.....$7,500.00

EQUIPMENT S & S CO.
211 Corporation Way Medford 55, Mass.
Phone MYstic 6-8700

RELAYING RAIL

Track Accessories
All Sizes

LEFTON INDUSTRIAL CORP.
***General Office:* 212 Victor Street**
St. Louis 4, Missouri

DEPENDABLE USED MACHINES

Special:—Pioneer port. secondary plant—40x22 rolls, screens, conveyors, Diesel power, etc.

American car puller	Pioneer 9x36 port. crushing plant	P&H 255A dragline
30" magnetic pulley	Symons vibrating bar grizzly	Insley K-12 dragline
9x36 jaw crusher	Telsmith 30" reciprocating feeder	Bay City 25 dragline
16x16 roll crusher	Pioneer 30" x 200' conveyor	Austin Badger shovel
40' bucket elevator	Harris Power Horse; 2½ yd. bucket	Hopper car unloader

These machines reconditioned in our newly built daylight plant. Come see them!

10004 Southwest Highway TRACTOR & EQUIPMENT CO. Oak Lawn, Ill.

FOR SALE
EUCLID REAR DUMP TRUCKS

Bucyrus-Erie Draglines, 2½ yd. to 8 yd.
Bucyrus-Erie Shovels, ¾ yd. to 8 yd.
Northwest Draglines, ¾ yd. to 2½ yd.
Northwest Shovels, ¾ yd. to 2½ yd.
Manitowoc Draglines, 2½ yd. to 5 yd.
Manitowoc Shovels, 2½ yd. to 5 yd.
Marion Shovels & Drags, 4 yd. to 9 yd.
Lima Shovels & Drags, 1½ yd. to 6 yd.
Osgood Shovels & Drags, 1½ yd. to 2½ yd.
Caterpillar Graders & Dozers.
Hi-Lift Shovels.
P&H Truck Mtd. Crane & Hoe, ⅜ yd.
2400 Lima Shovel front attachment.
4500 Manitowoc Shovel front attachment.
6" and 9" Drills, Diesel and Electric

other equipment available not listed above.

WILLIAM LUBRECHT, III
Construction Equipment

311 W. Diamond Ave. - Hazleton, Pa.
Phone: Gladstone 5-4041 or 5-0253

FOR SALE

9—Rotary Dryers & Kilns: 3' x 24'; 42" x 25'; 4'6" x 40'; 6' x 60'
2—Rotary Coolers: 104"x30'; 104"x70'
1—Hardinge Conical Ball Mill, 6' D x 22", steel liner
Patterson Ball Mill, 50' x 22" unused
1—Al. Ch. Steel Ball Mill, 6' x 16'
1—Penna. Crusher Ring Type Granulator, Trojan size K3-24, 40 HP
1—Sturtevant 8 x 10 Jaw Crusher

PERRY EQUIPMENT CORP.
1414 N. 6th St. Phila. 22, Pa.
STevenson 4-7210

FOR SALE

1—Bucyrus-Erie, Well Drill, Size 27 T Ser. No. 22380, with some accessories for drilling 6" holes.

For further information, write or phone

WARNER COMPANY
Purchasing Agent
1721 Arch St. Philadelphia 3, Pa.
RI 6-3900

FOR SALE
FIVE TRANSIT MIXERS

2—Jaeger 3 y. (4¼ yd. Agitator) Hi-Discharge, 1945-1947 Models, one mounted on 6-wheeler, one un-mounted.
1—Smith 3 yd. (4¼ yd. Agitator) Hi-Discharge, mounted 6 wheeler @ $1500., un-mounted @ $900.
1—Smith 3 yd. (4¼ yd. Agitator) Hi-Discharge, unmounted.
1—Rex 3 yd. (4¼ yd. Agitator) Hi-Discharge, un-mounted.
Note. Buy used ones now while cement is short—trade later for new ones. Terms to all.

SHOVELS & CRANES

Insley	"K-12"	½ Yd. Trench Hoe or Dragline (2).
Unit	"514"	½ Yd. Used Trench Hoe.
Lorain	"TL-20"	½ Yd. Used Dragline or Trench Hoe.
Unit		Shovel Attach., Unit "514."

MISCELLANEOUS

Caterpillar	"D-6"	Diesel Tractor w/Hi-Lift Cable Traxcavator, 1950 model in fine shape.
Caterpillar	"D-6"	Diesel Tractor w/Traxcavator. Needs some track repairs.
Adams	"411"	Diesel Motor Grader, w/Cab & Scarifier @ $2200.
Barber-Greene	"705"	RT Runabout Ditcher, serial number 705-49-4. Digs 4¼ ft. deep.
Universal	2036	R.B. Jaw Crusher on skids w/Apron Feeder.
Universal	"1824"	Rebuilt R.B. Jaw Crusher, on skids.
Gruendler	"3XD"	Used Portable Pulverizer w/ Apron Feeder, Cat. D8800 Diesel Power, discharge conveyor. Low-priced.
Cedarapids		Used Portable Gravel Plant, closed circuit, two unit plant; hopper, plate feeder, gas power, 1036 jaw, 3x8 screen, PD40 Dies. eng., pneums.

NOTE: Above equipment belongs to us. Located in our yard.

EIGHMY EQUIPMENT COMPANY
120 S. Pierpont
Rockford, Illinois Phone 4-6706

BROADCAST SECTION

24x26 Permanent Magnetic Pulley
18x26 Permanent Magnetic Pulley
18x19 D.C. Magnetic Pulley
30x19 D.C. Magnetic Pulley
8x14 D.C. Magnetic Pulley
S-A Hammermill, Knittel Type
American #13SA Hammermill
2—Kent Maxecon #7 Mills
5—5' and 6' Pebble Mills
Kennedy #19S Gearless Gyratory
Climax Jaw Crusher 10" x 20"
Dodge Lever Type Jaw Crusher 9x15
Acme Jaw Crusher 14" x 26"
Acme Road Mach. Jaw Crusher 10x18
15 Ton Stiffleg, 110' Boom
Lambert 2 Drum Derrick Hoist 50 HP
Lidgerwood 1 Drum 30 H.P. Dock Winch
National 25 HP D.D. Dragline Hoist
Stroudsberg 1 Drum Hoist Size 500
Sullivan 1 Drum Electric Tugger Hoist
8' Gayco Separator
Cedar Rapids D.D. Screen 3x10'
Hummer Type 31 D.D. Screen 6x5
Abbe Turbo-Sifter #2 Blutergess
4—Easton Dump Cars 24" ga. 1½ yd.
Jeffrey Apron Feeder 30" x 33'
Apron Feeder 18" x 5½'
69—36" Trough Idlers 5 roll type
50—48" Trough Idlers, antifriction
18" and 24" New Idlers
Misc. Size Large Conveyor Pulleys
10" and 12" Gravity Roller Conveyor
Simplex & Duplex Bin Gates
42" x 12' Air Tank ½" shell
Link-Belt 8" Encl. Spaced Elevator, 58' centers, with platform.

G. A. UNVERZAGT & SONS INC.
136 Coit Street Irvington 11, N.J.

FOR SALE

DIESEL GENERATING SETS

Following sets are now in operation at Sloan, Clark County, Nevada. May be inspected during daylight hours. All are in first class operating condition and will be replaced by public power service within next 30 days. Prices quoted on request.

1. **Fairbanks Morse Model 32E14. 150 H.P. 300 R.P.M. 100 KW. 220-440 Volt.**
2. **Fairbanks Morse Model YVA. 120 H.P. 257 RPM. 72 KW. 480 Volt.**
3. **International UD18. 50 KW. 220-440 Volt.**
4. **Caterpillar D-4600. 30 KW. 480 Volt.**

POWER UNITS

May also be inspected in operating condition at Sloan, Nevada.

1. **Caterpillar Model D-13,000.**
2. **Caterpillar Model 75.**

For further information contact:

E. B. LONG

UNITED STATES LIME PRODUCTS CORP.

2244 Beverly Boulevard
LOS ANGELES 57, CALIFORNIA
DUnkirk 5-3271

JAW CRUSHERS—6" x 3" to 60" x 48"

Before buying or selling any
FARREL-BACON JAW CRUSHERS
It will pay you to consult

BACON-PIETSCH Co., Inc.
Engineers & Manufacturers Send for Catalogue
22 Park Street
Montclair, N. J.

Machine Shop Facilities

FEEDERS
Conveyors, Screens, etc.

FOR SALE

1—6'11" x 23'11" Tube Mill with Feeder, 450 HP Motor.
1—7' x 60' Stone Dryer, ⅛" Plate & 50 HP Motor.

CHARLES V. FISH CO., INC.
530 Hamilton St. Allentown, Pa.
Phone HEmlock 5-4701

EQUIPMENT CORPORATION OF AMERICA

ECA REBUILT SPECIALS

1—35-40 ton Model 8 Industrial Brownhoist Diesel Locomotive Crane, serial #11401, with 50' boom, powered with Caterpillar D13000 diesel engine. Cap. 70,000# @ 12' radius; 84,000# @ 12' radius with outriggers. Thoroughly rebuilt. Will pass the most rigid inspection. Your inspection invited. Located at our Clifton Heights, Pa. plant.

2—Worthington (late model) Air Compressors mdl. M-80. 445 cu. ft. displacement, V-belt drive, with 75 HP G.E. 220/440/60C-3ph. motors. Motor and compressor mounted on common base. Overall length of each unit 89", width 51", height 54". Thoroughly rebuilt.

Write for new Stock List No. 456

EQUIPMENT CORPORATION OF AMERICA

CLIFTON HEIGHTS, PA. • P. O. Box 608P
PITTSBURGH 30, PA. • P. O. Box 933P
CHICAGO 4, ILL. • 327P So. La Salle St.
NEW YORK 7, N. Y. • 30-P Church St.

FOR SALE

1—electric Rail Car Puller
1—Telsmith 24" Plate Feeder
1—1½ yd. Owen Clamshell Bucket
1—2x6 single deck Vibrating Screen
1—Model 7 Northwest Dragline
1—Euclid Model No. 1Z Bottom Dump 30 K.W. Diesel Generator Sets 220-440 Volt 3 phase

COOGAN GRAVEL COMPANY
903 Jefferson Bldg. Peoria, Ill.
Phone 3-9553

FOR SALE

HAMMERMILLS—Jeffrey 42 x 24 and Pennsylvania S-6.

COLLECTORS—Cyclone dry type and Centrifugal Wash type, both have 10,000 CFM capacity.

MOTOR—860 RPM GE Slip Ring, 400/3/60. 150 HP.

MOTORS—690 & 570 RPM., GE Squirrel Cage, 440/3/60. 75 HP.

G. & W. H. Corson, Inc.
Plymouth Meeting, Pa.

KILNS—DRYERS—COOLERS

1—8' x 125', ¾" shell.
4—7' x 110', 9/16" shell.
1—7'6" x 7' x 125', ½" shell.
2—6' x 74', ⅝" shell.
1—5' x 67', 5/16" shell.
1—6' x 60', 5/16" shell.
1—4'6" x 50', ⅜" shell.

CRUSHERS—PULVERIZERS—MILLS

2—Allis Chalmers 10" Superior McCully.
1—Allis Chalmers k-9 Gates Gyratory.
10—Jaw Crushers, 5" x 6" to 42" x 48".
2—Pennsylvania #SXR-100, 100 TPH.
3—Hardinge 4½' x 16", 6' x 22", 7' x 36" Ball Mills.
3—Patterson 6' x 8' Ball Mills.
1—Raymond #53 Imp Mill.
1—Dixie #2424 non-clog Hammermill.
7—NEW Jeffrey Hammermills 24" x 20", 20" x 12", 8" x 15".

SCREENS—SEPARATORS

3—Tyler Hummer Screens, 4' x 7', 4' x 8', 3' x 10', single and double deck.
1—Link Belt 3' x 8' double deck Screen.
5—Rotex 40" x 84", 40" x 120".
1—Air Separator, 4'.

MISCELLANEOUS

2—Chicago 14" x 7" Compressors, 434 cfm.
2—Oliver Rotary Dewaterers, 8' x 4'.
12—Bucket Elevators, 20' to 75' centers.
250 ft. Link Belt 12" Troughing Conveyor.
1—10,500 gpm Centrifugal Pump, 185' head.

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ROD MILLS—3x10, 4x7, 4x14, 5x10, 5x14, 6x12 & 8'x12'. Also 5'x12'.
2—Denver 30"x54".
TUBE MILLS—3'x12', 5'6"x22', 5'x18' & 6'x22'

HAMMERMILLS

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WILLIAMS GA30—24x30 & GA60—24x60.
DIXIE 5040—MOGUL 50x40 & 30x30.
GRUENDLER 5XD—48x30 & 1—5XA—20"x30".
2—PENNA. 8XR—100 TPH.
UNIVERSAL No. 4—36x26.
PENNA. THOR SXT 13-48. Size 48x54

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3—3'x6', 3'x12' & 54"x10'3".

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5 Sturtevant 10', 14' & 18'.
4 Gayco 8', 6' & 5'.
1—12 D Roto Clone.

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11'6"x18', 14'x18' & 8'x10' Oliver Drum Filters.
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6'x14' HARDINGE COUNTER CURRENT.
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36"x19'3" Wemco Spiral Classifier.
16—5'x25', 8'x34' & 8'x20' Rake Classifiers.
9—Turrett Bowl Classifiers 3'x24'10"x10', 8'x24'x12', 4'6"x26'x16', & 8'x31'x24'.
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PARTS FOR 42" SUPERIOR McCULLY.

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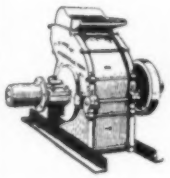

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9"x36"		Telsmith Wheeling Roller Bearing Jaw Crusher
36"		Telsmith Gyrasphere Crusher
#32		Telsmith Gyratory Crusher
28"		Telsmith Intercone Crusher
6—36		Allis Chalmers Crusher
16"x16"		New Holland Double Set Rolls
20x24		Pennsylvania Hammer Mill
		Double Chain Bucket Elevator Bucket, Size 20" 60' Centers
10"		Tandem Rome Diesel Scraper
1—100	KW	G.M.C. Diesel Generator Set
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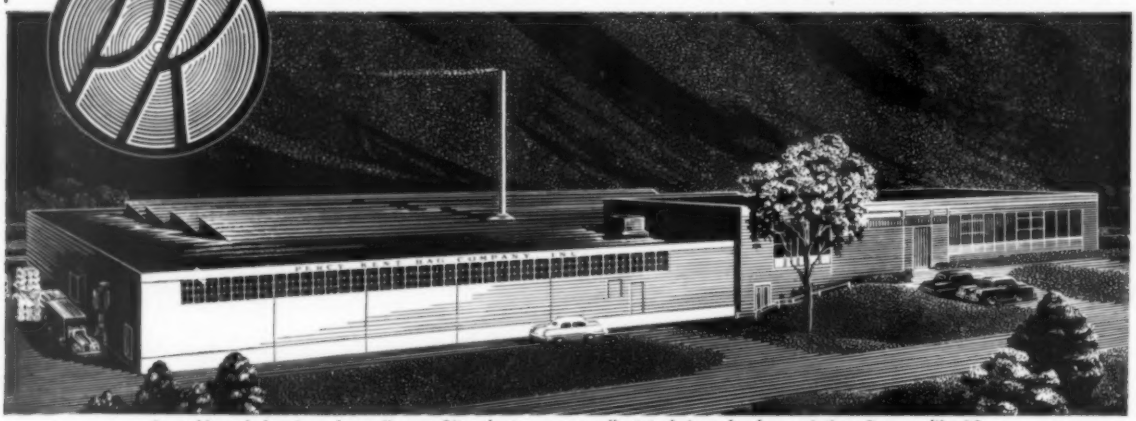

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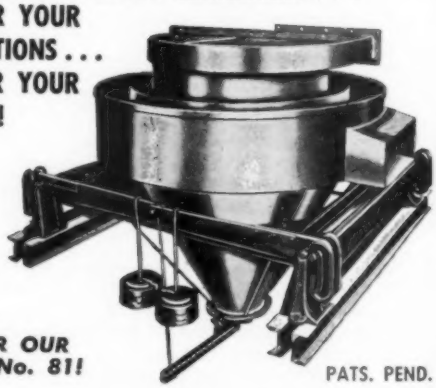

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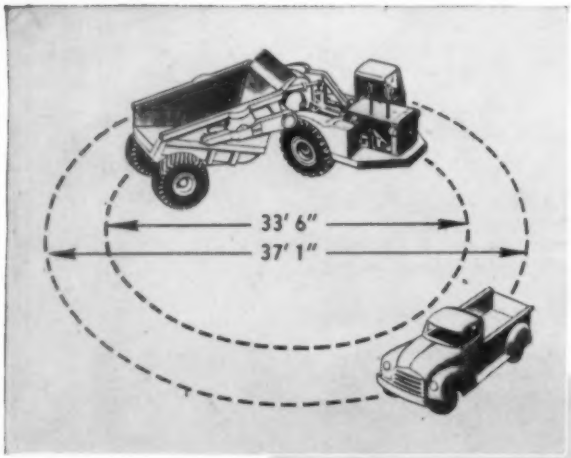

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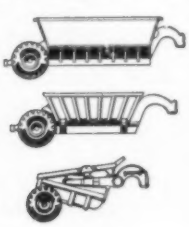

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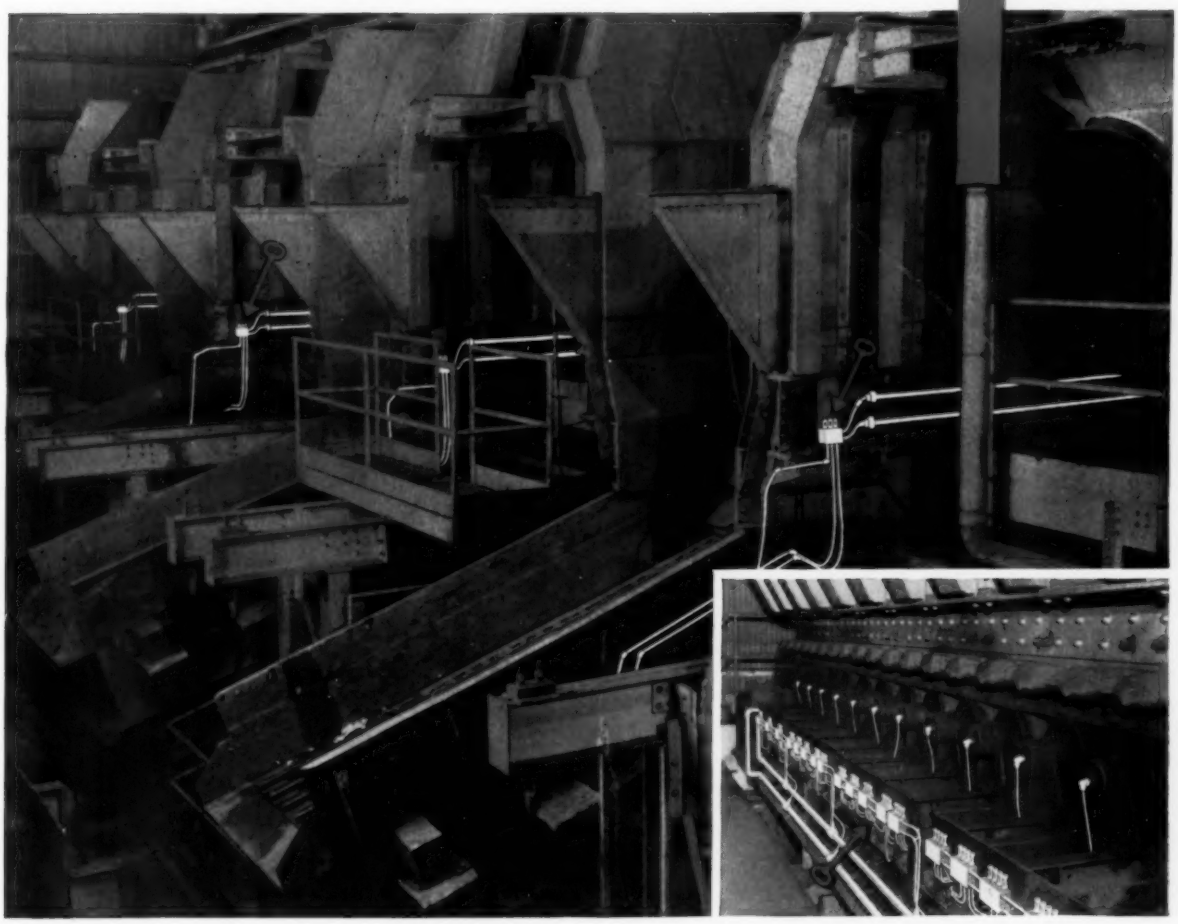

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